Mathematics

Class 6 Term 1

Pupil's Book

Ministry of Education, Youth & Sports
Bikenibeu, Tarawa, Republic of Kiribati

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CONTENTS

Please do not write in this book.
Write the answers in your exercise book.

UNIT 1: PLACE VALUE

Lesson 1: Introducing the Denary/Decimal System

Group Work

Group 1: Complete the following.

a) 1.01, 1.03, 1.05, ___, ___, ___, ___, ___

b) 2.02, 2.04, ___, ___, 2.10, ___, ___, ___

What is the value of 5 in these numbers?

a) 254.06

b) 537.14

c) 3642.35

d) 7261.52

Group 2: Complete the following.

a) 3.31, 3.33, 3.35,___, ___, 3.41, ___, ___, ___

b) 5.52, 5.54, ___, ___, ___, ___, ___, ___, 5.70

What is the value of 3 in these numbers?

a) 304.5

b) 643.64

c) 2456.73

d) 7241.35

Group 3: Complete the following.

a) 11.1, 11.3, ___, ___, 11.9, ___, ___, ___, ___

b) 20.92, 20.94, ___, ___, ___, ___, 21.04, ___, ___

What number is equivalent to the following?

a) $(3 \times 100) + (4 \times 10) + (6 \times 1) + (2 \times \frac{1}{10}) + (8 \times \frac{1}{100})$

b) $(7 \times 1000) + (2 \times 100) + (0 \times 10) + (3 \times 1) + (7 \times \frac{1}{10})$

Individual Application

Write these numbers in another form.

1. 40.35
2. 143.8
3. 2431.05
4. 92,534.718

Additional Exercise

Write the place value of the digit underlined.

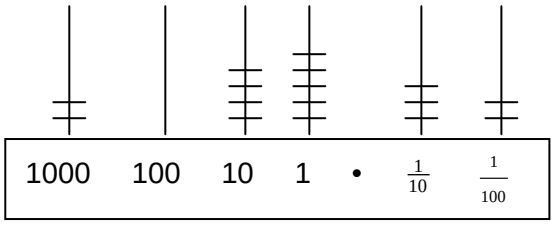
1. 4.5<u>7</u>
2. 1.<u>1</u>4.09
3. <u>9</u>18.42
4. 2156.6<u>2</u>
5. 723.<u>3</u>5
6. 2<u>9</u>845.67

Lesson 2: Reading and Writing Numbers Shown on the Abacus

Group Work

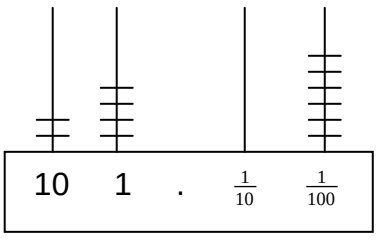
Do the following activities together.

1. What is the number shown on the abacus?

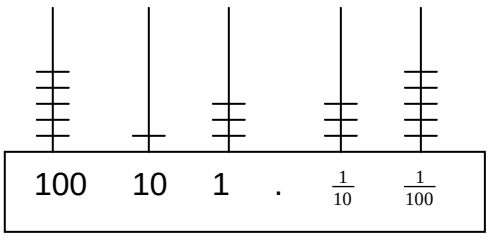


2. Show these numbers on the abacus

(a) 24.06



(b) 513.35



3. What is the value of each digit in these numbers?

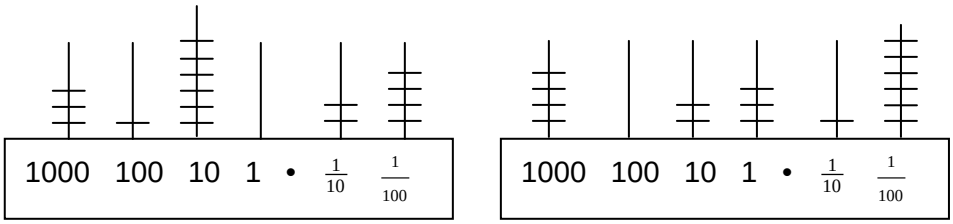
   Example: 25.6 → 2 tens, 5 ones and 6 tenths

   a) 243.5

   b) 6472.38

Individual Application

1. What are the numbers shown on the abacus?



2. Show these numbers on the abacus.

   a) 256.4 b) 3107.15

3. What are the values of the digits in these numbers?

   a) 82.73

   b) 423.5

   c) 5317.06

Additional Exercise

1. What is the value of the digit underlined in each of the following numbers?

   a) 4<u>3</u>6.2

   b) 3751.6<u>2</u>

   c) <u>6</u>257.34

   d) 203<u>5</u>.7

2. Write these numbers in figures.

   a) 3 hundreds, 4 tens and 1 tenth

   b) 5 hundreds, 6 ones, 3 tenths and 4 hundredths

Lesson 3: Reading and Writing Numbers Including Decimals to Three Decimal Places

Group Work

Work together to show the following numbers on the abacus.

1. 49.8
2. 467.37
3. 96.842
4. 6539.385

Individual Application

1. What is the value of each digit of these figures?

   a) 352.34

   b) 4258.43

   c) 5364.247

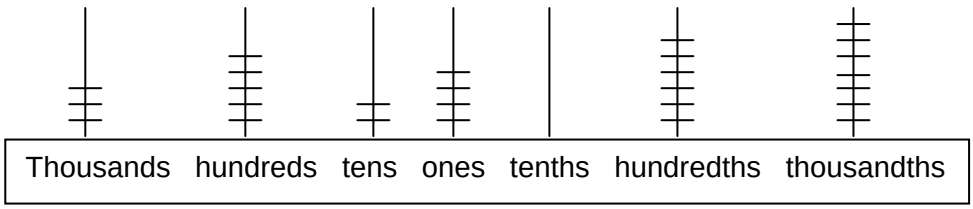
   d) 8293.563

2. What are the numbers shown on the chart?

Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths	Number
	3	6	4	3	0	1	
2	0	5	6	2	7		
5	4	6	0	0	5	3	
7	5	2	3	0	6		
3	9	0	8	4	2	6	

Additional Exercise

1. What is the number shown on the abacus?



2. Write these numbers in another form.

Example : 245.63 → (2 x 100) + (4 x 10) + (5 x 1) + (6 x $\frac{1}{10}$) + (3 x $\frac{1}{100}$)
→ 200 + 40 + 5 + .6 + .03

a) 523.45

b) 3614.37

c) 7258.639

Lesson 4: Reading and Writing Numbers to One Million

Individual Application

1. Write numbers that come between these numbers.

a) 12,000, ____, ____, ____, ____, 17,000

b) 20,250, 20,500, ____, ____, ____, ____, 21,750

c) 200,000, 400,000, ___, ___, ___, ___, ___, ___, 1,200,000.

2. Circle any number which is greater than 19,000.

13,000 17,000 19,500 2500 21,00

3. Underline the number that comes before 910,000.

280,000 980,000 810,000 920,000 750,000

Additional Exercise

Study the pattern, then find the missing number.

1. 10,000, 12,000, 14,000, ____, ____, ____, 22,000
2. 61,000, 63,000, ____, ____, 69,000, ____
3. 550,000, _____, 590,000, _____, 630,000
4. 920,000, _____, 960,000, _____, _____.

Lesson 5: Writing Numbers in Expanded Form

Group Work

Work out the answers together. Then write the answers in your exercise book.

Write these numbers in expanded form.

1. 290,450
2. 910,568
3. 398,674

Individual Application

Find the missing numbers.

1. 698,343 = 600,000 + ____ + 8,000 + ____ + 40 + ___
2. 999,898 = 900,000 + 90,000 + ___ + 800 + ___ + 8
3. 16,453 = 10,000 + ___ + 400 + ___ + 3
4. 87,354 = ___ + 7,000 + ___ + 50 + ___

Lesson 6: Writing Numbers including Decimals in Expanded Form

Group Work

Working together, write the numbers in expanded form.

1. 7634.936
2. 98534.05
3. 1863453.714

Individual Application

Write the numbers in expanded form:

1. 2581.809
2. 17394.85
3. 423689.937
4. 846257.643

Additional Exercise

Find the missing numbers:

1. 4321.35 = 4000 + ___ + 20 + ___ + 0.3 + ___
2. 634957.08 = ___ + 30,000 + 4,000 + ___ + 50 + 7 + ___
3. _____ = 5000 + 300 + 20 + 1 + 0.8 + 0.03
4. _____ = 700,000 + 50,000 + 9000 + 400 + 200 + 30 + 0.9

Lesson 7: Rounding Down Numbers Including Decimals

Group Work

Work together to round down the following to one decimal place.

1. 26.342
2. 9894.63
3. 100.62
4. 63.94

Individual Application

Round down these numbers to two decimal places.

1. 26.043
2. 123.1221
3. 64391.321
4. 904321.243

Lesson 8: Rounding Up Numbers Including Decimals

Group Work

Work together but record the answers individually.
Round up to the nearest 1000.

1. 3536
2. 8900
3. 1549
4. 7830

Individual Application

Round off these numbers to the nearest unit.

1. 8.9
2. 12.7
3. 9.5
4. 102.7
5. 4083.6
6. 984326.8

Lesson 9: Rounding Off Numbers Including Decimals

Group Work

Work out the following together. Record the answers in your exercise book.

1.	6900	round off to the nearest thousand
2.	17.045	round off to 2 decimal places
3.	125	round off to the nearest ten
4.	60.4334	round off to 3 decimal places
5.	2.37	round off to 1 decimal place

Lesson 10: Assessment

Group Work

Work together to answer the following.

1. What is the value of 4 in the number 4,000,000?
2. What is the value of 0 in the number 498,032?
3. What is the value of 9 in the number of 18.09?
4. What is the value of 3 in the number of 6.9003?

Individual Application

1. Write these decimal numbers using expanded notation:
   a) 19394.39
   b) 293456.004
   c) 639.58
   d) 173.25
2. Draw these numbers on the abacus.
   a) 293.9 b) 39.45
   c) 39345.61 d) 7138.67
3. Round off these numbers to the nearest unit.
   a) 9.5 b) 3.8
   c) 13.6 d) 1.4
   e) 2005.7 f) 305934.3

UNIT 2: WHOLE NUMBERS

Lesson 1: Introducing Whole Numbers in Kiribati

Counting in ones	teeu, uoou, teeniu, aau, niimau, oonou, iitiui, waaniu, ruuai, tebwi teuana, uoua, teniua, aua, nimau, onoua, itiua, waniua, ruaiua, tebwina
Counting in twos	tiki toun tara bwati tati teera uua teen aanga niima tetaangana, uataanga, tentaanga, ataanga, nimataanga, onotaanga, ititaanga, wantaanga, ruataanga, tengaun tekirina, uakiri, tenikiri, akiri, nimakiri, onokiri, itikiri, wanikiri, ruakiri, tengaun tebwebwena, uabwebwe, tenibwebwe, abwebwe, nimabwebwe, onobwebwe, itibwebwe, wanibwebwe, ruabwebwe, tengaun
Counting in tens	tebwina, uabwi, tenibwi, abwi, nimabwi, onobwi, itibwi, wanibwi, ruabwi tebubua tengaun, uangaun, teningaun, angaun, nimangaun, onongaun, itingaun, waningaun, ruangaun, tebubua
Counting in spans	terakana, uaraka, tenraka, araka, nimaraka, onoraka, itiraka, wanraka, ruaraka, tengaun.
Counting in paces	terangatana, uarangata, tenrangata, arangata, nimarangata, onorangata, itirangata, wanrangata, ruarangata, tengaun
Counting in fathoms	tengaana, uangaa, teningaa, angaa, nimangaa, onongaa, itingaa, waningaa, ruangaa, tengaun

Counting in pieces	temwakorona, uamwakoro, tenimwakoro, amwakoro, nimamwakoro, onomwakoro, itimwakoro, wanimwakoro, ruamwakoro, tengaun
Counting in fractions	temwanangina/ te iterana, kauamwakoro, katenimwakoro, kamwakoro, kanimamwakoro, kaonomwakoro, kaitimwakoro, kawanimwakoro, karuamwakoro
Counting in bundles	tebabatina, uababati, tenibabati, ababati, nimababati, onobabati, itibabati, wanibabati, ruababati, tengaun teamwiina, uaamwi, tennamwi, amwi, nimaamwi, onomwi, itimwi, wanimwi, ruamwi, tengaun teritorona, uaritora, ternitoro, aritoro, nimaritoro, onoritoro, itiritoro, wanritoro, ruaritoro, tengaun tebwatikuna, uabwatiku, tenibwatiku, abwatiku, nimabwatiku, onobwatiku, itibwatiku, wanibwatiku, ruabwatiku, tengaun teungina, uaung, teniung, aung, nimaung, onoung, itiung, waniung, ruaung, tengaun

Group Work

Complete the table:

Group 1:

No. of people numerals	Married couples	Twins
2	_____	_____
4	_____	_____
16	_____	_____
38		_____

Group 2:

Numbers	Kiribati Words
1	tengaana
__	teninga
12	_____
99	_____
20	_____

Group 3:

Numbers	In Words
_____	ruangaa ma itiraka
16 terangata	_____
65 teraka	_____
_____	tengaun ma uarangata
_____	nimagaun ma wanraka
41 terangata	_____

Group 4:

Numbers	Kiribati Words
10 coconuts	_____
12 coconuts	_____
100 coconuts	_____
30 coconuts	_____
500 coconuts	_____

Group 5:

Numbers	In Words
1 teiri	_____
_____	tengaun ma teungina
_____	teningaun ma nimairi
47 te ung	_____
12 te iri	_____

Group 6:

Numbers	In Words
7 te babati	_____
_____	tengaun ma wannamwi
_____	onongaun ma ruababati
42 te amwii	_____
16 te babati	_____

Individual Application

Write in Kiribati words

1. $2\frac{1}{2}$ loaves of bread
2. 2,698
3. 20 fathoms of string
4. 53 spans
5. 40 coconuts
6. 3 couples

Additional Exercise

1. Name 2 common objects counted in ones.
2. Write 2 ways of counting twins.
3. Write these numbers in Kiribati words.
   a) 400 coconuts
   b) 12 375
   c) $\frac{3}{4}$

Lesson 2: Read and Write Kiribati Numbers

Group Work

Working together, name things that can be counted using the following Kiribati counting names.

1. teaina
2. tekorana
3. teamwiina
4. temanna

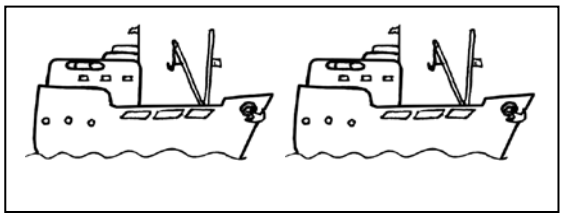
Individual Application

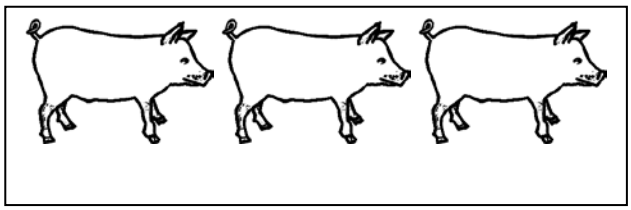
Write up to 15 :

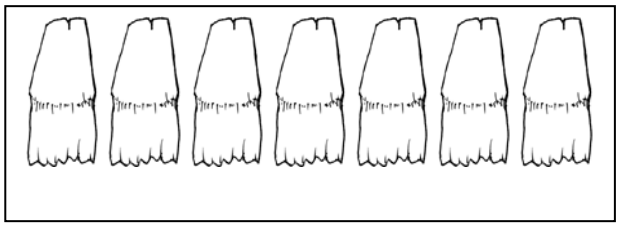
1. teirina
2. tekorana
3. tekuona
4. tewaana
5. tebaana
6. tekaina

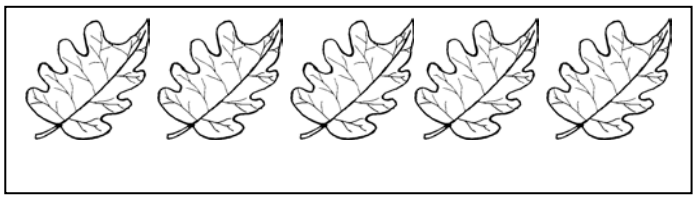
Additional Exercise

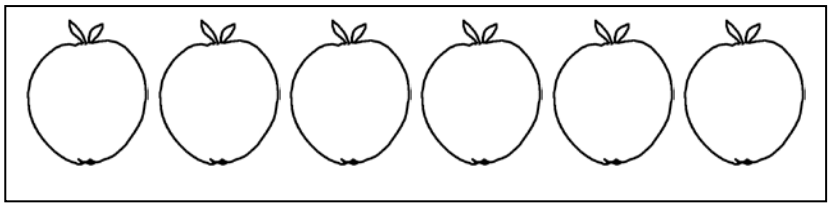
Write in words.

1. 

2. 

3. 

4. 

5. 

Lesson 3: Even and Odd Numbers

Individual Application

1. Here is a set of numbers:

   5, 18, 36, 109, 42, 27, 56, 2003, 1901

   Which of these are even numbers and which are odd numbers ?

2. Show your working out to find whether 2097 is even or odd.

Additional Exercise

1. List the even and odd numbers between 14 and 94.
2. Which of the following is true?

   a) Even number = odd number + 1

   b) Even number = odd number – 1

   c) Odd number = even number + 1

Lesson 4: Prime Numbers

Individual Application

Copy and complete this table, showing the primes in each group of 10 numbers.

Group	Primes
0 - 9	_____
10 - 19	_____
20 - 29	_____
30 - 39	_____
40 - 49	_____
50 - 59	_____
60 – 69	_____

Additional Exercise

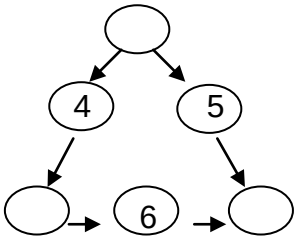
Which of these numbers are primes?

113 121 123 133 209 211 143 13570

Lesson 5: Triangle Numbers

Group Work

1. Draw triangular patterns for the 5^{th} and 6^{th} triangle numbers.
2. Draw a magic triangle using numbers 1, 2, 3, 4, 5 and 6 to fill in the six circles.

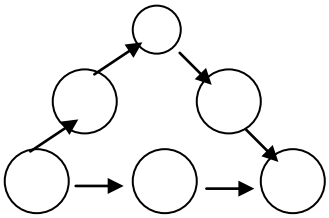


The total of the three numbers along the sides equals 9.
Each number is used once.
Three circles have been filled. Fill in the other three.

3. Draw another magic triangle and fill in the six numbers to get the total 12 instead of 9.

Individual Application

1. Fill in the circles with the numbers 2, 3, 4, 5, 6 and 7.
   The total along the each side equals 12.



2. Draw a triangular pattern to find the 7^{th} triangle number.
3. Find the 8^{th} triangle number.

Additional Exercise

1. Draw a magic triangle using the numbers 3, 4, 5, 6, 7 and 8. The total along the three sides must equal 15.

2. Find the 10^{th} triangle number.

Lesson 6: Square Numbers

Group Work

Discuss and complete the magic squares.

1.

4	9	
3	5	7
8		6

	7	6
	5	
4	3	

		4
7	5	3
6		

Individual Application

1. Complete these magic squares.

a)

8		6
3	5	7
4		

b)

4	9	
3	5	7
8		6

2. Complete the square pattern below.

1 = 1
3 + 1 = 4
1 + 3 + 5 = 9
1 + 3 + 5 + 7 = 16
1 + 3 + 5 + 7 + __ = __

Additional Exercise

1. Complete the magic square.

	1	8
7		
2	9	4

2. Complete the square pattern.

1 1
1 + 2 + 1 4
1+ 2 + 3 + 2 + 1 9
_ + _ + _ + 4 + _ + _ + _ __

Lesson 7: Writing Numbers in Words

Group Work

Write these numbers in words.

1. 28,012
2. 1,321,649
3. 4,603,360
4. 25,050,008

Individual Application

Write these numbers in words:

Example: 10,294,050 → ten million, two hundred and ninety four thousand and fifty.

1. 621,493
2. 4,609
3. 560,714
4. 4,219,104

Additional Exercise

Write these numbers in words :

1. 12,605
2. 1,470,050
3. 403,127
4. 70,060,453

Lesson 8: Writing Numbers in Figures

Group Work

Write these words in figures.

1. six thousand, five hundred and thirty two
2. one hundred and forty million, three hundred and eighteen thousand and seven
3. five hundred and one million, seven thousand and sixteen.

Individual Application

Write these numbers in figures.

Example: three thousand, six hundred and ninety four = 3,694

1. three thousand and twenty
2. nine thousand, four hundred and sixty
3. two million, four hundred and eleven thousand, eight hundred and five
4. twenty million, ten thousand, seven hundred, and two
5. eight hundred and sixty five million, one hundred and twelve thousand and forty.

Additional Exercise

Write these numbers in figures.

1. nine million, twelve thousand and ten
2. ninety million, fifty thousand, two hundred and one
3. twenty seven million, four hundred and one thousand and eight
4. three hundred and six million five hundred and thirty one

Lesson 9: Rounding Numbers

Individual Application

Round off these numbers to the nearest ten, then multiply.

1. 14 x 86
2. 21 x 17
3. 35 x 23
4. 47 x 13
5. 248 x 42
6. 319 x 24

Round off these numbers to the nearest hundred, then add

1. 392 + 859
2. 139 + 261
3. 529 + 153
4. 1,439 + 256
5. 648 + 4,357
6. 3,446 + 943

Additional Exercise

Round off these numbers to the nearest ten, then add

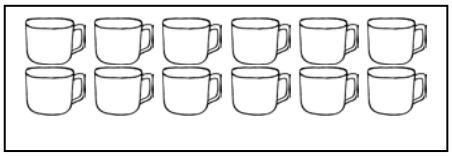
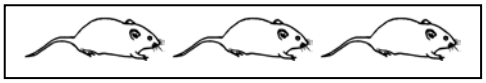
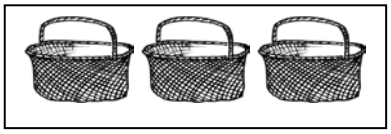
1. 21 + 78
2. 39 + 95
3. 86 + 143
4. 62 + 93
5. 253 + 46

Lesson 10: Assessment

Group Work

Divide children into groups, to complete the work assigned below. They present it to the other groups.

Group 1: Write these in Kiribati number names.

1. 
2. 
3. 

Group 2: Say which of the numbers in this set are Odd and which are Even. (15, 104, 32, 2001, 47, 62, 310, 53). Explain why they are odd and even.

Group 3: Explain what a Prime Number is and write the Prime Numbers between 0 and 30.

Group 4: Explain what a Square Number is.
Show your working out to find the 11^{th} and 23^{rd} square number.

Group 5: Write these number in words.

a) 1,211
b) 102,419,310

Group 6: Explain what a Triangle Number is, then list the triangle numbers between 10 and 50.

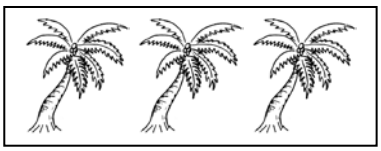
Group 7: Round off these numbers to the nearest ten and the nearest hundred.

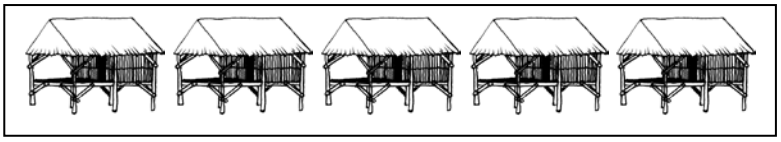
(See the table on the next page.)

	Numbers	Nearest Ten	Nearest Hundred
1.	1,452		
2.	5,947		
3.	8,675		

Individual Application

1. Add the objects and write the number in Kiribati.

a) 

b) 

2. Write the odd and even numbers between 0 and 50.
3. Write the prime numbers between 69 and 100.
4. Work out the square numbers for:
   a) 22^{nd}
   b) 23^{rd}
   c) 24^{th}
5. Write these numbers in figures.
   a) twenty nine thousand, four hundred and thirty
   b) two million, one hundred and one thousand and nineteen
6. List the triangle numbers between 50 and 100.
7. Round off these numbers to the nearest ten and to the nearest hundred.

	Numbers	Nearest Ten	Nearest Hundred
a)	3,947	**3950**	**3900**
b)	7,452	**7450**	**7500**

UNIT 3: OPERATIONS WITH WHOLE NUMBERS

Lesson 1: Addition of whole numbers up to four digits

Group Work

Work with a partner.
For each of the following draw an abacus. Find the sums using the abacus.

1. 1804 + 49
2. 1789 + 721
3. 1345 + 123
4. 2063 + 1325
5. 5431 + 2038

Individual Application

1. Add these in steps:

a)
$$\begin{array}{r} 945 \\ \underline{+\ 600} \end{array}$$

b)
$$\begin{array}{r} 4983 \\ \underline{+\ 3264} \end{array}$$

c)
$$\begin{array}{r} 1694 \\ \underline{+\ 1352} \end{array}$$

d) 5015 + 3572

e) 3728 + 2015

f) 2959 + 728

g) 3312 + 2601

2. Use an abacus to add these:

a)
$$\begin{array}{r} 5504 \\ \underline{+\ 1124} \end{array}$$

b)
$$\begin{array}{r} 6346 \\ \underline{+\ \ 573} \end{array}$$

c)
$$\begin{array}{r} 958 \\ \underline{+\ 361} \end{array}$$

Additional Exercise

1. Add these on an abacus.

a) 6174 + 3251 b) 8345 + 653 c) 1658 + 324

2. Work these out using the why and how steps.

a) 9018 + 516 b) 1893 + 375 c) 7522 + 1353

Lesson 2: Addition Using Expanded and Short Form

Group Work

Put the children in four groups to do the following:

1. Use the expanded form to add the following:

a) 5453 + 4502

b) 2795 + 207

2. Use the short form to add the following:

a) 5826 + 3698

b) 1038 + 541

c) 2564 + 1213

Individual Application

Copy the following then complete.

1. 7209 + 6588 _3_ _7

2. 3794 + 1585 _ _79

3. 1867 + 969 2_ _6

4. 5492 + 1217 6_ _9

Additional Exercise

1. Use the expanded and the short forms to find the sums.

   a) 8046 + 253

   b) 5816 + 2375

2. Use an abacus to add these numbers.

   a) 552 + 243

   b) 8504 + 42

Lesson 3: Subtraction of Whole Numbers

Group Work

Work together to find the answers.

1. Teere collects 1540 coconuts. On his way home he drops 300 coconuts. How many coconuts does he bring home?

2. Use the contracted form to subtract:

a) 8375 – 6342

b) 9864 – 5463

c) 9783 – 5471

d) 6875 – 1432

Individual Application

Work out the answers:

1. 946 - 214

2. 7642 - 4401

3. 5637 - 2415

4. 658 – 107

5. 7386 – 4054

Additional Exercise

Find the answer to these subtraction questions.

1. 5278
   - 1275

2. 9865
   - 1432

3. 1579
   - 478

4. 4867 – 1566

5. 8396 – 7234

6. Bwao's weight is 9,789 grams. Mango's weight is 7,642 grams.
   a) How much more does Bwao weigh than Mango?
   b) How much less does Mango weigh than Bwao?

Lesson 4: Subtraction of Multi-Digit Numbers

Individual Application

1. Copy and complete:

   a) 7849
   - 2453
   5_ _6

   b) 5_8
   - 69
   34_

   c) 34_5
   - 1 46
   _259

   d) _417
   - 14 5
   _ _12

2.
   a) 5846 – 803
   b) 2896 – 2594
   c) 2266
   - 1075
   d) 7598
   - 1458
   e) 7362
   - 6998

Additional Exercise

1. Complete this table:

-	6 2 1 5	4 5 2 1	3 7 4 6
1 6 5 9	_____	2 9 6 2	_____
2 3 8 7	_____	_____	1 4 5 9
1 9 2 0	4 2 9 5	_____	_____

2. In Tom's class there are 46 pupils. 30 of them are girls. How many boys are there in Tom's class?

3. Rutema had $2500 in her safe. She used $1,355 for building her house. How much had she left in her safe?

Lesson 5: Multiplication of Whole Numbers

Group Work

Work together to solve the following problems:

1. Multiply using the two methods.

   a) 28 x 25 b) 46 x 32 c) 50 x 26

2. Estimate each product. Then multiply.

   a) 58 x 37 b) 67 x 35 c) 25 x 17

Individual Application

1. Multiply using expanded notation.

a) 96 x 15

b) 65 x 22

c) 35 x 41

d) 81 x 62

2. Using the contracted form, multiply the following :

   a) 65 x 28 d) 83 x 62

   b) 83 x 62 e) 49 x 53

   c) 59 x 18

Additional Exercise

Solve these problems.

1. Aoni bought 25 bags of rice. The cost of 1 bag was $21. What was the total cost?
2. Marieta travelled 24 km. every day for 12 days. How far did she travel altogether?
3. Use the expanded then the contracted form of multiplication.

a) 24 x 22 d) 95 x 80

b) 38 x 16 e) 47 x 25

c) 56 x 34

Lesson 6: More Work on the Multiplication of Whole Numbers Up to Four Digits

Group Work

1. Multiply:

   a) 225 x 25 b) 125 x 18 c) 187 x 15

2. Use the contracted form to work out the following multiplication problems.

   a) 321 x 34 c) 720 x 20

   b) 72 x 45 d) 542 x 16

Individual Application

1. Use expanded notation to answer the following:

   a) 98 x 26 b) 127 x 42

2. Multiply:

   a) 390 x 52 c) 575 x 22

   b) 605 x 33 d) 835 x 45

3. Solve these problems:

   a) A farmer planted 270 tomatoes a day for 12 days. How many tomatoes did he plant altogether?

   b) Reiti bought 28 boxes of oranges. Each box contained 48 oranges. How many oranges were there altogether?

Additional Exercise

1. Multiply:

   a) 236 x 34 c) 309 x 59

   b) 373 x 44 d) 582 x 68

2. Use the contracted form to work out the answers to the following:

   a) 485 x 32 b) 633 x 55 c) 75 x 48

3. Use the expanded form to work out the answers to the following:

   a) 464 x 36 b) 89 x 38 c) 875 x 45

Lesson 7: Division of Whole Numbers Up to Four Digits

Group Work

Working together, find the quotients.

1. 5895 ÷ 5

2. 9876 ÷ 8

3. $12\overline{)2568}$

4. $20\overline{)54320}$

5. $17\overline{)3678}$

Individual Application

1. Name the parts of each division sum.

a)
$$\begin{array}{r} 71 \\ 54\overline{)\ 3838} \\ \underline{-\ 378} \\ 58 \\ \underline{-\ 54} \\ 4 \end{array}$$

b) 927 ÷ 3 = 309

2. Use steps to find the following quotients.

a) $1658 \div 4$

b) $88540 \div 10$

c) $81\overline{)8865}$

d) $35\overline{)69725}$

e) $5\overline{)9435}$

Additional Exercise

1. Complete these division sums.

a)

$$\begin{array}{r} \\ 32\overline{)\ 2891} \\ \underline{-\ 288} \\ \quad 11 \\ \quad \underline{00} \\ \quad 11 \end{array}$$

b)

$$\begin{array}{r} \quad 186 \\ 26\overline{)4836} \\ \underline{-\ \ \ } \\ \\ \underline{-\ \ \ \ } \\ \\ \underline{-\ \ \ \ } \end{array}$$

2. Follow the steps to find the quotients.

a)

$$\begin{array}{r} \\ 51\overline{)\ 68540} \\ \underline{-\ 51} \\ \quad 175 \\ \underline{-\ 153} \\ \quad 224 \\ \underline{-\ 204} \\ \quad 200 \\ \underline{-\ 153} \\ \quad 47\text{r} \end{array}$$

d) $7688 \div 43$

b)

$$\begin{array}{r} \\ 34\overline{)\ 95962} \\ \underline{-\ 68} \\ \quad 279 \\ \underline{-\ 272} \\ \quad 76 \\ \underline{-\ 68} \\ \quad 82 \\ \underline{-\ 68} \\ \quad 14\text{r} \end{array}$$

e) $5163 \div 11$

c)

$$14\overline{)2448}$$

- 14
- 104
- 98
- 68
- 56
- 12r

Lesson 8: More About the Division of Whole Numbers

Group Work

Work together to find the answers.

1. Find the quotients. Use the short form of calculation.

a) 40872 ÷ 52

b) 1472 ÷ 32

c) 1638 ÷ 7

2. Use the long form to find the following quotients.

a) $21\overline{)2453}$ b) $70\overline{)14728}$ c) $15\overline{)3675}$

Individual Application

1. Use the Say, Show, Solve and Answer steps to find the quotients:

   Mr Tebau made 2,464 doughnuts for his 32 friends. How many doughnuts did each friend get?

2. Use the long form of calculation to divide:

   a) $4\overline{)4238}$ b) $8\overline{)5696}$ c) $25\overline{)3186}$

3. Use the short form to divide :

   a) $8\overline{)7369}$ b) $12\overline{)1678}$ c) $25\overline{)4575}$

Additional Exercise

1. Use long and short forms to find the following quotients:

a) 1620 ÷ 36

b) 1999 ÷ 19

c) 65024 ÷ 64

d) $52\overline{)\ 5363}$

e) $41\overline{)\ 4182}$

Lesson 9: Order of Operations

Group Work

Work together to calculate the following:

1. 3 + 5 - 7
2. 16 ÷ 2 + 4 x 3
3. 12 + 2 x (3 + 4) x 2
4. 56 ÷ 7 + 10 – 2
5. 120 ÷ 4 x 5 + (2 + 8) – 20

Individual Application

Simplify the following:

1. 210 ÷ 7 + (11 – 4) x 5
2. (18 + 4) x 3 – 20 ÷ 5
3. 3 + 5 – 10 ÷ 2
4. 210 – 20 x 4 + 16
5. 10 x 3 + 20 ÷ 5 – 21
6. 8 x 16 + 10 ÷ 5 – 20

Additional Exercise

Evaluate the following:

1. 124 + (68 – 42) ÷ 4 x 6
2. 35 ÷ 7 – 3 + 8
3. 12 x 3 + 5 ÷ 5
4. 205 ÷ 5 + 4 - 25
5. (3 x 9) – (4 x 2) + 28 – 5

Lesson 10: Assessment

Group Work

Work together to solve the following.

1. Use an abacus to find the sum:

   a) 5783 + 1205

   b) 3001 + 986

2. Use expanded and contracted forms to find the difference:

   a) 3596 - 1453

   b) 5109 - 982

   c) 3468 - 1782

   d) 6729 - 4567

   e) 1593 - 341

3. Find the products:

   a) 125 x 20

   b) 139 x 55

   c) 99 x 99

   d) 5831 x 15

4. Find the quotient. Use the long form of calculation.

   a) 9354 ÷ 12

   b) 34582 ÷ 25

   c) $36\overline{)75892}$

   d) $12\overline{)53490}$

Individual Application

1. Solve the following:

   a) 24 x 3 + 30

   b) 4 x 14 + 20 ÷ 5

   c) Rutema went shopping. She bought 24 cartons of orange juice. There were 48 cans of orange juice in each carton. How many cans were there altogether?

   d) Mangonikua made rock buns. She could make 320 buns in one day. How many rock buns could she make in 5 days?

   e) The head teacher planned to have a trip to Bikeman for 1,550 students. The boat she planned to use could take only 50 passengers. How many trips would be needed to transport all the students to Bikeman?

   f) Tetu collected coconuts for copra. On the first day he collected 250, on the second day he collected 568 and on the third day he collected 365. How many coconuts were there altogether?

   g) Aonny sold 2,500 candies each day. On her way to the market some of her friends took 39 candies. How many candies were left?

2. Evaluate:

   a) 112 + 45 – (4 x 10)

   b) 33 x 24 + 8 ÷ 5

   c) 4569 – 189

   d) 25 x 3 ÷ 10

   e) How many pens are there in 100 packets if one packet contain 12 pens?

   f) In Class 6 there are 42 pupils. Sixteen are boys. How many are girls?

UNIT 4: FRACTIONS

Lesson 1: To Review Ideas of Fractions : Improper Fractions, Mixed Number Fractions in their Simplest Form and Equivalent Fractions

Group Work

Work together to find the answers.

1. Change these mixed fractions to improper fractions:

   a) $3\frac{4}{5}$ c) $8\frac{1}{2}$

   b) $7\frac{2}{3}$ d) $10\frac{3}{8}$

2. Change to mixed fractions:

   a) $\frac{22}{5}$ b) $\frac{35}{6}$

3. Complete the following equivalent fractions:

   $\frac{1}{2} = \frac{\square}{8} = \frac{\square}{12} = \frac{7}{\square} = \frac{10}{\square}$

Individual Application

1. Simplify to their lowest terms:

   a) $\frac{6}{15}$

   b) $\frac{16}{24}$

   c) $\frac{42}{63}$

2. Change to improper fractions:

   a) $3\frac{4}{7}$

   b) $6\frac{5}{8}$

   c) $9\frac{3}{5}$

3. Change to mixed numbers:

   a) $\frac{14}{8}$

   b) $\frac{24}{9}$

   c) $\frac{20}{6}$

4. Complete these equivalent fractions:

   a) $\frac{2}{3} = \frac{6}{\square}$

   b) $\frac{3}{5} = \frac{21}{\square}$

   c) $\frac{5}{7} = \frac{15}{\square}$

Additional Exercise

1. Write in their simplest form:

   a) $\frac{9}{15}$

   b) $\frac{14}{21}$

   c) $\frac{26}{42}$

2. Change to improper fractions:

   a) $3\frac{3}{7}$

   b) $7\frac{4}{9}$

   c) $11\frac{4}{5}$

3. Change to mixed numbers:

   a) $\frac{42}{20}$

   b) $\frac{65}{26}$

   c) $\frac{48}{32}$

4. Complete the following by filling in the boxes:

   a) $2\frac{3}{4} = \frac{\square}{4} = \frac{\square}{12}$

   b) $3\frac{3}{5} = \frac{\square}{5} = \frac{\square}{20}$

Lesson 2: Addition Using Equivalent Fractions

Group Work

Work out the following together with fraction strips.

1. $\frac{3}{8} + \frac{1}{4}$
2. $\frac{1}{2} + \frac{3}{10}$
3. $2\frac{4}{5} + 3\frac{1}{2}$
4. $4\frac{1}{2} + 1\frac{3}{8}$

Individual Application

Solve these problems. Question 1 is done as an example.

1. The boys took $2\frac{1}{4}$ hours to cut the grass of their playground. After the boys had finished, the girls swept it taking $1\frac{1}{2}$ hours. How long did the boys and girls together take to clean up their playground?

   To solve the problem : add:

   $= 2\frac{1}{4} + 1\frac{1}{2}$

   $= (2 + 1) + \frac{1}{4} + \frac{1}{2}$

   $= 3 + \frac{1}{4} + \frac{1}{2}$

   $= 3 \times \frac{1}{4} + \frac{2}{4}$

   $= 3\frac{3}{4}$

2. Add these fractions:

   a) $1\frac{1}{5} + 2\frac{1}{2}$

   b) $2\frac{3}{4} + 1\frac{1}{8}$

   c) $3\frac{2}{3} + 2\frac{1}{6}$

3. Father works $3\frac{1}{4}$ hours in his plantation during the morning and only $1\frac{1}{2}$ hours in the afternoon. How long does father spend in his plantation altogether?

4. I take $4\frac{1}{2}$ loaves of bread for my class on Monday and $1\frac{1}{4}$ loaves the next day. How much does the class eat altogether?

Additional Exercise

1. Find the sum of the fractions:

   a) $\frac{7}{35} + \frac{3}{5}$

   b) $5\frac{4}{7} + 2\frac{4}{21}$

2. Solve the problem:

   The boys spent $4\frac{1}{2}$ days working on a new hut for their teacher in the first week. They spent another $5\frac{1}{4}$ days in the second week. How long did they spend altogether making the new hut?

Lesson 3: To Add and Subtract Fractions with Denominators in the Range of 2 to 12

Group Work

Work together to find the answers. Use the pair of blocks with fractions to help you.

1. The leader rolls the two blocks. When they stop rolling the group adds the two fractions facing up. The one who calls the right answer first will have a turn to roll the blocks.

2. The leader rolls the blocks again. When they stop rolling the group subtracts the fraction on block 2 from the fraction on block 1.

   Example: **block 1 – block 2**

   $\frac{1}{2} - \frac{2}{5}$

   $= \frac{5}{10} - \frac{4}{10}$

   $= \frac{1}{10}$

   Use the same rule as in (1).

Individual Application

1. Change the following into mixed fractions:

   a) $\frac{27}{4}$

   b) $\frac{16}{3}$

   c) $\frac{14}{4}$

   d) $\frac{17}{6}$

   e) $\frac{29}{12}$

2. Solve the following:

   a) $\frac{3}{8} + \frac{3}{4}$

   b) $\frac{7}{8} - \frac{5}{6}$

   c) $\frac{2}{3} + \frac{3}{5}$

   d) $\frac{5}{6} - \frac{2}{3}$

Additional Exercise

1. Write these fractions in their lowest terms:

   a) $\frac{6}{9}$

   b) $\frac{12}{36}$

   c) $\frac{8}{48}$

   d) $\frac{9}{61}\ \frac{3}{4}$

2. Solve the following:

a) $\frac{11}{12} + \frac{3}{5}$

b) $\frac{2}{3} - \frac{3}{5}$

c) $\frac{1}{6} + \frac{7}{12}$

d) $\frac{6}{7} + \frac{2}{3}$

Lesson 4: Add and Subtract Mixed Fractions (mixed numbers)

Individual Application

1. Solve the following fractions:

a) $2\frac{3}{4} + \frac{2}{5}$

b) $4\frac{2}{3} + 3\frac{5}{6}$

c) $9\frac{3}{8} + 4\frac{3}{6}$

2. Work out these sums:

a) $4\frac{1}{3} - 2\frac{2}{5}$

b) $7\frac{2}{7} - 3\frac{5}{6}$

c) $9\frac{7}{9} - 4\frac{5}{6}$

Additional Exercise

1. Write these fractions in their simplest form:

a) $\frac{8}{12}$

b) $\frac{9}{21}$

c) $\frac{12}{36}$

d) $\frac{15}{35}$

2. Calculate the answers:

a) $2\frac{3}{5} + 3\frac{5}{6}$

b) $5\frac{1}{4} + 7\frac{7}{12}$

c) $6\frac{2}{3} - 2\frac{2}{5}$

d) $8\frac{3}{8} - 4\frac{3}{4}$

Lesson 5: Solving Problems Involving Fractions

Individual Application

Solve these problems. Show your working out in full.

1. Tom gave $\frac{1}{3}$ of the cake to his father, $\frac{1}{8}$ to his mother and the rest to his sisters and brothers. What part of his cake did his father and mother eat?

2. The tank was $\frac{3}{4}$ full of water. After 3 days it was $\frac{1}{2}$ full. What fraction of the tank did the villagers use during those three days?

3. Tione did $\frac{5}{12}$ of the work. Toromon did $\frac{1}{5}$ of it. What part of the work still needs to be done?

Additional Exercise

1. Solve these problems:

   a) $3\frac{5}{8} + 4\frac{5}{12}$

   b) $21\frac{5}{6} + 12\frac{7}{15}$

2. Solve this problem.

   Meere usually spends $\frac{2}{5}$ of her money on food, $\frac{1}{6}$ on school material and the rest on clothes. What part of her money is usually spent on food and school materials? What fraction is spent on clothes?

Lesson 6: Multiplication of Fractions Using Rectangular Regions and Algorithms

Group Work

1. Your teacher will give you a work card. Draw diagrams of the problem on the back of the card. After that solve the problem on the front of the card, using an algorithm.

2. Draw diagrams to find the answer.

   a) $\frac{1}{3} \times \frac{3}{4}$

   b) $\frac{1}{2} \times \frac{3}{5}$

Individual Application

1. Draw diagrams to find the answer.

   a) $\frac{3}{5}$ x $\frac{1}{2}$

   b) $\frac{2}{5}$ x $\frac{1}{5}$

2. Work out the answers to the following without using diagrams.

   a) $\frac{3}{4}$ x $\frac{1}{5}$

   b) $\frac{2}{3}$ x $\frac{3}{8}$

   c) $\frac{4}{5}$ x $\frac{1}{8}$

   d) $\frac{5}{6}$ x $\frac{2}{3}$

Additional Exercise

1. Draw diagrams to find the answer.

   a) $\frac{2}{3}$ x $\frac{5}{4}$

   b) $\frac{5}{6}$ x $\frac{11}{4}$

2. Solve the following using algorithms.

   a) $\frac{3}{4}$ x $\frac{3}{5}$

   b) $\frac{2}{7}$ x $\frac{2}{3}$

Lesson 7: Multiplication of Mixed Numbers by Proper Fractions and Mixed Numbers

Group Work

Discuss and work out answers to the following.

1. Choose the correct mixed number from column B for the improper fractions in column A.

	A	B
a)	$\frac{4}{3}$	$1\frac{5}{6}$
b)	$\frac{6}{4}$	$1\frac{4}{5}$
c)	$\frac{9}{5}$	$3\frac{1}{4}$
d)	$\frac{11}{6}$	$1\frac{2}{4}$
e)	$\frac{13}{4}$	$1\frac{1}{3}$

2. Draw diagrams to show these mixed numbers.

   a) $2\frac{2}{3}$

   b) $1\frac{5}{8}$

3. Work out the following using diagrams:

   a) $\frac{3}{4}$ x $1\frac{2}{3}$

   b) $2\frac{1}{4}$ x $\frac{2}{3}$

Individual Application

1. Change to improper fractions:

   a) $2\frac{3}{4}$

   b) $3\frac{2}{5}$

   c) $4\frac{1}{2}$

   d) $7\frac{2}{3}$

2. Change to mixed numbers:

   a) $\frac{22}{5}$

   b) $\frac{17}{3}$

   c) $\frac{19}{4}$

   d) $\frac{36}{7}$

3. Solve these using diagrams and then solve using algorithms:

   a) $2\frac{2}{3}$ x $\frac{3}{4}$

   b) $2\frac{1}{2}$ x $\frac{3}{5}$

Additional Exercise

1. Write these fractions in their simplest form:

   a) $\frac{8}{24}$

   b) $\frac{12}{48}$

   c) $\frac{27}{36}$

2. Solve the following using algorithms:

   a) $2\frac{5}{6}$ x $3\frac{2}{3}$

   b) $3\frac{2}{3}$ x $1\frac{1}{4}$

   c) $2\frac{3}{8}$ x $1\frac{2}{3}$

   d) $3\frac{1}{2}$ x $2\frac{1}{3}$

Lesson 8: Divisions of Fractions and Uses of the Reciprocal of a Fraction

Group Work

Find the answers together.

1. $\frac{2}{5} \div 10$
2. $\frac{5}{6} \div 60$
3. $\frac{3}{8} \div 12$
4. $\frac{3}{5} \div \frac{1}{2}$
5. $\frac{4}{7} \div \frac{8}{2}$
6. $\frac{4}{9} \div \frac{2}{3}$

Individual Application

1. Write the reciprocals of the numbers:
   a) 4
   b) $\frac{1}{4}$
   c) 6
   d) $\frac{5}{6}$
   e) 7
   f) $\frac{14}{7}$
2. Divide the following:
   a) $\frac{3}{5} \div 9$
   b) $\frac{4}{9} \div 12$
   c) $\frac{3}{8} \div 24$
   d) $\frac{4}{7} \div \frac{2}{3}$
   e) $\frac{7}{10} \div \frac{7}{15}$
   f) $\frac{3}{4} \div \frac{15}{24}$

Additional Exercise

1. Give the reciprocals of these fractions:
   $\frac{2}{5}$, $\frac{3}{7}$, 7, $\frac{4}{9}$, 9
2. Solve these division problems:
   a) $2\frac{1}{2} \div \frac{4}{5}$
   b) $3\frac{2}{3} \div \frac{15}{21}$
   c) $5\frac{1}{4} \div \frac{7}{8}$

Lesson 9: Review and Practise Work from Lesson 8 Included Examples Involving Mixed Numbers

Group Work

Discuss and solve the following in their groups.

1. Change these mixed numbers to improper fractions:

   a) $2\frac{1}{2}$

   b) $3\frac{3}{4}$

   c) $4\frac{3}{5}$

2. Complete these by writing in the missing number or numeral:

   a) $\frac{5}{1} \times \frac{1}{\square} = 1$

   b) $\frac{1}{2} \times \frac{\square}{-} = 1$

   c) $\frac{3}{4} \times \frac{4}{\square} = 1$

   d) $\frac{2}{3} \times \frac{3}{2} = \frac{\square}{\ }$

   e) $\frac{3}{5} \times \frac{\square}{3} = 1$

   f) $\frac{4}{7} \times \frac{\square}{-} = 1$

   g) $\frac{\square}{8} \times \frac{8}{5} = 1$

   h) $\frac{\square}{-} \times \frac{6}{5} = 1$

Individual Application

1. Change to mixed numbers and simplify to their lowest terms:

   a) $\frac{10}{4}$

   b) $\frac{15}{10}$

   c) $\frac{12}{8}$

   d) $\frac{15}{9}$

2. Find the reciprocals of these numbers:

   a) 4

   b) $2\frac{1}{4}$

   c) 7

   d) $6\frac{3}{5}$

3. Solve the following:

   a) $\frac{3}{4} \div \frac{1}{2}$

   b) $\frac{3}{8} \div \frac{3}{4}$

   c) $\frac{5}{6} \div \frac{2}{3}$

   d) $2\frac{2}{5} \div \frac{2}{5}$

   e) $3\frac{1}{3} \div 2\frac{1}{2}$

   f) $2\frac{1}{4} \div 1\frac{1}{2}$

Additional Exercise

1. Solve these problems:

   a) $1\frac{1}{3} \div \frac{1}{2}$

   b) $3\frac{3}{5} \div 1\frac{2}{3}$

   c) $2\frac{1}{4} \div 1\frac{1}{2}$

2. Solve these problems:

   a) A rectangle has an area of 60 sq. cm. It is $3\frac{1}{4}$ cm wide. How long is it?

   b) How many lengths $1\frac{1}{2}$ metres long can be cut from a stick $10\frac{1}{2}$ metres long?

Lesson 10: Assessment

Group Work

Help each other to work out the following:

1. Complete the following:

   a) $\frac{16}{32} = \frac{\quad}{8} = \frac{\quad}{24}$

   b) $3\frac{5}{9} = \_$

   c) $\frac{24}{7} = \_$

   d) $\frac{4}{11} = \frac{12}{\quad} = \frac{20}{\quad}$

2. Find answers to the following:

   a) $\frac{3}{4} + \frac{5}{6} =$

   b) $2\frac{2}{3} + 4\frac{2}{5} =$

   c) $\frac{5}{6} - \frac{3}{8} =$

   d) $6\frac{2}{5} - 2\frac{3}{4} =$

   e) $\frac{3}{4} \times 2\frac{1}{2} =$

   f) $4\frac{2}{3} \div \frac{7}{21} =$

Individual Application

1. Change to mixed numbers:

   a) $7\frac{27}{36}$

   b) $\frac{32}{48}$

2. Change to an improper fraction:

   $6\frac{3}{7}$ **(** $\frac{45}{7}$ **)**

3. Write in its simplest form:

   $\frac{28}{36} = \frac{\square}{18} = \square$

4. Solve these fraction problems:

   a) $3\frac{2}{3} + 4\frac{5}{6} =$

   b) $7\frac{1}{4} - 2\frac{3}{5} =$

   c) $3\frac{4}{5} \times 2\frac{2}{3} =$

   d) $\frac{7}{8} \div 2\frac{1}{3} =$

5. Write the equivalent fraction for:

a) $\frac{5}{6} = \frac{\square}{24}$

b) $3\frac{2}{3} = \frac{\square}{3} = \frac{\square}{12}$

Additional Exercise

Solve these problems:

1. In our school last Friday, children spent $2\frac{1}{4}$ hours cleaning and $1\frac{3}{5}$ hours singing. How much time was spent cleaning and singing?

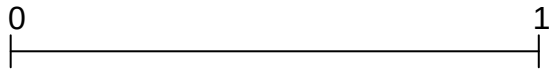
2. The tank was $\frac{5}{6}$ full of water. After 2 days, it was $\frac{3}{4}$ full. What fraction of the water in the tank was used in the 2 days?

UNIT 5: DECIMALS

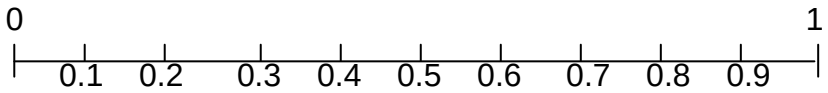
Lesson 1: Read and Write Decimals to Two Places and Change Fractions to Decimals

Group Work

Discuss and draw a number line as shown below :



1. Divide it into 10 equal parts and name the points.



2. Put in the following numerals correctly on the number line.

a) 8.5 9.1 9.9

b) .08 .09 .14

Individual Application

1. Arrange these distances in order from the shortest to the longest.

   7.8 km., 9.9 km., 8.0 km., 0.9 km., 5.6 km.

2. Arrange the masses in order from the lightest to the heaviest.

   0.05 kg., 0.09 km., 2.43 kg. 0.34 kg. 0.01 kg.

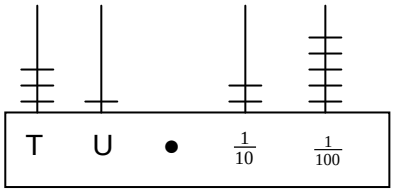
3. Write these fractions in decimal form

Fraction	$2\frac{1}{10}$	$3\frac{12}{100}$	$4\frac{16}{100}$	$3\frac{39}{100}$	$6\frac{27}{100}$	$7\frac{40}{100}$
Decimal						

Fraction	Decimal Form
$\frac{7}{10}$	0.7
$\frac{9}{10}$	
$9\frac{9}{100}$	
$25\frac{19}{100}$	
$127\frac{8}{10}$	

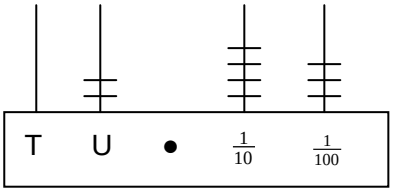
Additional Exercise

1. Record the number illustrated on each abacus in the three different ways shown in the example below.

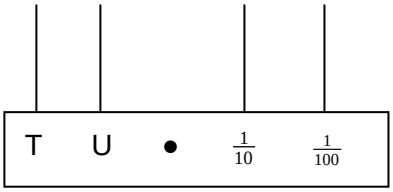


3 tens 1 unit 2 tenths 5 hundredths
30 + 1 + .2 + .05
31.25

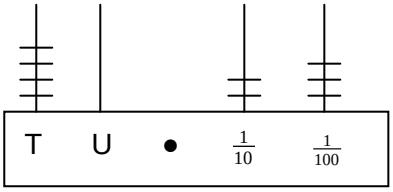
a)



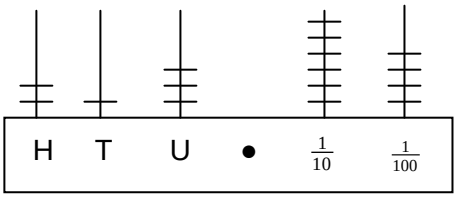
b)



c)



d)



2. Write one of the symbols = (equal to), < (less than) or > (greater than) in the spaces below.

a) $\frac{8}{10}$ ___ 0.8

b) $\frac{8}{10}$ ___ 0.68

c) $\frac{8}{10}$ ___ 1.6

d) $\frac{8}{10}$ ___ 0.9

e) $\frac{8}{10}$ ___ 1.9

Lesson 2: Add and Subtract Decimals, Involving Tenths and Hundredths

Group Work

Work together to do the following.

1. Use column form with diagrams to work out the sums without carrying:

   a) 26.54 + 213.38

   b) 358.57 + 24.34 + 3.6

2. Subtract (i) excluding borrowing in decomposition form and (ii) including borrowing in decomposition form:

   a) 463.75 – 141.23

   b) 645.72 – 216.85

Individual Application

1. Add the first two sums using column form with a diagram and the next two without:
   a) 352.43 + 436.35
   b) 574.65 + 187.76
   c) 753.68 + 34.53
   d) 544.76 + 157.88
2. Subtract the following:
   a) 12.23 – 1.16
   b) 120.68 – 24.79
3. Tina had $45.68 in the bank. She took out $5.99 to buy a CD. How much money did she have left in the bank?

Additional Exercise

1. Work out the following:
   a) 64.35 + 25.54
   b) 37.68 – 15.24
   c) 342.05 + 69.76
   d) 46.34 – 28.57
2. Taake bought 3 tuna fish which weighed 5.64 kg, 8.36 kg and 6.2 kg. What was their total weight?

Lesson 3: Identifying the Place Value of the Digits in the Range .001 to .999

Group Work

Work together to do the following :

1. Draw a number chart and illustrate the following numerals. The first one has been done for you.

243.435

T	H	T	U	•	t	h	th
○ ○	○ ○	○ ○	○ ○		○ ○	○ ○	○ ○
	○ ○	○	○		○ ○	○	○ ○
							○

a) 279.599

b) 1,234.567

2. Complete the following:

Fraction	Expanded Notation	Decimal Form
$24\frac{41}{100}$	$20 + 5 + \frac{4}{10} + \frac{1}{100}$	25.41
$\_\_\frac{219}{1000}$	$90 + 5 + \frac{2}{10} + \frac{1}{100} + \frac{9}{1000}$	_____
$81\frac{3}{10}$	$80 + 1 + \frac{3}{10}$	_____

Individual Application

1. Complete the following:

Fraction	Expanded Notation	Decimal Fraction
$81\frac{3}{10}$	$80 + 1 + \frac{3}{10}$	_____
_____	_____	246.45
_____	$200 + 20 + 5 + \frac{3}{10} + \frac{6}{100}$	_____

2. Record the number illustrated on the counting board in these three ways:

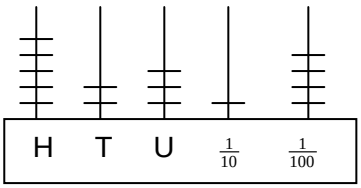
U	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$
○ ○	○ ○ ○	○ ○	○ ○
○		○ ○ ○	○ ○

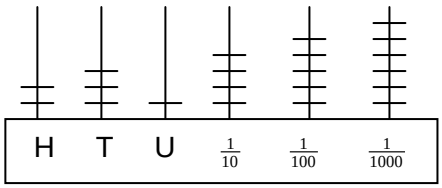
3 units + 2 tenths + 5 hundredths + 4 thousandths

$3 + \frac{2}{10} + \frac{3}{100} + \frac{4}{1000}$

Individual Application

Write the numbers illustrated on the abacus as decimals:





Additional Exercise

1. Complete the pattern:
   a) 4.12, 4.13, 4.14, ___, ___
   b) 5.621, 5.622, 5.623, _____, _____
   c) 8.999, 8.998, 8.997, _____, _____
2. Write these as decimals:
   a) $85\frac{3}{10}$ c) $85\frac{2}{100}$
   b) $185\frac{112}{1000}$
3. Write these in expanded notation:
   a) $47\frac{7}{10}$
   b) $253\frac{25}{100}$
   c) 545.37
   a) 368.156

Lesson 4: Addition and Subtraction of Decimals to Three Places

Group Work

Work together to solve the following.
Match the columns by arrows: number (a) has been done.

a)	63 tenths	$\frac{89}{100}$
b)	13.6 – 2.8	six hundred and forty three
	hundredths	
c)	0.01	4.8
d)	3.2 + 45.02	one hundredth
e)	6 – 2.4	1.18
f)	0.36 + .82	6.3
g)	89 hundredths	10.8
h)	600.43	4.4
i)	4 + 0.8	48.22
j)	8 – 3.6	seven hundreds and twenty six hundredths
k)	3.2 + 4.06	3.6

Individual Application

1. What is the value of '3' in the following numbers?
   a) 43.25
   b) 0.38
   c) 60.03
   d) 36.78
2. Work out the following:
   a) 33.683 + 21.114
   b) 124.387 + 63.968
   c) 98.938 – 63.726
   d) 187.326 – 96.458

Additional Exercise

Work out the following:

1. 8 + 43.4
2. 9.2 + 3.68 + 3.008
3. 145 + 663 + 0.03
4. 4 – 0.34
5. 27 – 16.106
6. 754.365 – 426.786

Lesson 5: Multiplication of Decimals by Whole Numbers in the Range 1 to 100

Group Work

Discuss and complete the following:

1 a) 2.6 = 26 tenths

b) 7.34 = ___ hundredths

c) .52 = ___ hundredths

d) 2.3 = ___ hundredths

e) .237 = ___ thousandths

f) 2.356 = ___ _____

2 a) 65 hundredths =

b) 65 thousandths =

c) 65 tenths =

d) 246 thousandths =

e) 246 hundredths =

f) 246 tenths =

3. Calculate the following:

a) 3.6 x 5

eg: 36 tenths

x 5

__ tenths = ☐

b) .36 x 5

36 hundredths

x 5

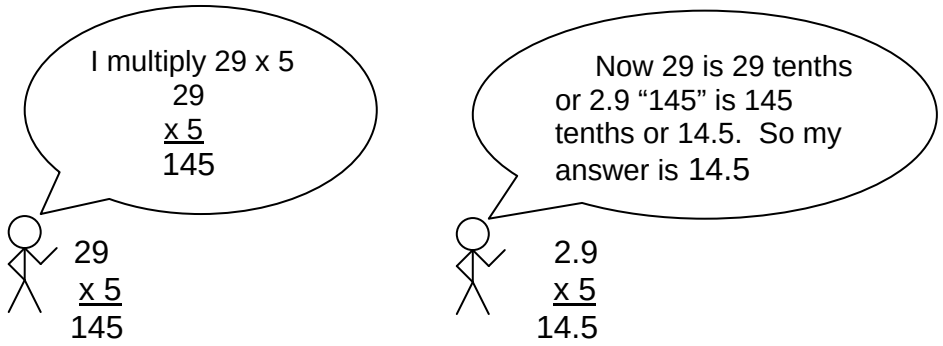
__ hundredths = ☐

Individual Application

Follow the steps of the ‘thinking’ method to the following multiplication sums in questions 1 and 2. Read through this example before you begin.

eg: 2.9 Think of 29 instead of 2.9
x 5 x 5 x 5
___ 145 145

Then think of 29 tenths = 2.9 and 145 tenths = 14.5



1. Solve these multiplication sums using the thinking method.

eg: 2.6 26 tenths
x 2 x 2
___ 52 tenths = 5.2

Answer 5.2

a) 1.36 b) 1.23
x 12 x 4
___ ___

2. Solve these using the ’thinking’ method:

a) 3.9 c) 3.6
x 9 x 8
___ ___

b) 7.12 d) 0.016
x 26 x 22
____ _____

Additional Exercise

1. Solve these using the ‘thinking’ method:

a) 4.6 c) 14.6
x 7 x 17

b) 1.46 d) 0.82
x 7 x 14

2. Calculate the following using the example in (a):

a) 5.6 x 8 = 448 tenths
= 44.8

b) 4.25 x 17 = ____ hundredths

= ____

c) 24.7 x 25 = _____ _____

= _____

d) 35.6 x 6 = _____ _____

= _____

Lesson 6: Multiplication of Decimals Involving Tenths in Multiplicand and Multiplier

Group Work

Discuss and complete the following:

1. 0.1 x 0.6 = 1 tenth x ☐ tenths

= (☐ x 6) hundredths

= 6 ?

= 0.06

2. 0.6 x 0.9 = ____ tenths x 9 tenths

= (____) hundredths

= ___ hundredths

= ___

3. 0.23 x 0.5 = 23 hundredths x ____ tenths

= (_____) hundredths

= _____ thousandths

= 0.115

Individual Application

1. Complete the following:

a) 3.4 x 0.4 = ___ tenths x 4 tenths
= (_____) hundredths
= ____ hundredths
= ____

b) 0.25 x 0.07 = ___ hundredths x 7 hundredths
= (_____) thousandths
= _____ thousands
= _____

c) 3.45 x 1.2 = ___ x 12 tenths
= (____ x 12) thousandths
= ____ thousandths
= ____

2. Solve these using an algorithm as follows:

i.e.

3.46	→	346	hundredths
x 1.2	→	x 12	tenths
002		692	
346		346	
4.152	←	4152	thousandths ($\frac{4152}{1000}$ = 4152 ÷ 1000 = 4.152)

a)

2.53	→	___	hundredths
x 2.2	→	___	tenths
		___	
		___	
_____	←	_____	thousandths

3. Study the pattern and then solve these:

3.46	(2 decimal place)
x 1.2	(1 decimal place)
692	
346	
4.152	(3 decimal places)

a) 2.34 x 0.4

b) 3.45 x 2.2

c) 42.5 x 0.24

Additional Exercise

Solve these sums using an algorithm.

1. 0.23 x 0.5
2. 2.15 x 0.3
3. 3.42 x 2.4
4. 4.6 x 0.23
5. 24.2 x 0.48

Lesson 7: Multiplication of Decimals by 10, 100 and 1000

Group Work

Work together to solve the following.

1. Solve this problem using the rules you have just been taught.

   Taake filled 100 bags with sand. Each bag of sand weighed 36.5 kg. What was the total mass of the 100 bags of sand?

2. Solve the following sums using the rule of multiplication by 10, 100 and 1000.

   a) 46.7 x 10

   b) 4.725 x 100

   c) 45.67 x 1000

3. Solve the questions in (2) but change the multipliers to divisors.

   For example : 46.7 ÷ 10

Individual Application

1. Solve the following using the thinking method:

   a) 24.6 x 10

   b) 3.452 x 100

   c) 3.12 x 1000

2. Work out these sums using the multiplication and division rules of 10, 100, and 1000:

   a) 4.2 x 10
   b) 3.46 x 10
   c) 56 x 100
   d) 35.67 x 100
   e) 5.248 x 1000
   f) 54.13 ÷ 10
   g) 742.5 ÷ 100
   h) 45.6 ÷ 1000
   i) 2.43 ÷ 100
   j) 3.63 ÷ 10

Additional Exercise

1. Solve these sums using the thinking method:

   a) 24.3 x 10
   b) 35.4 x 100
   c) 46.7 x 1000

2. Solve these sums using the multiplication and division rules of 10, 100 and 1000:

   a) 4.36 x 10
   b) 7.25 x 100
   c) 9.72 x 1000
   d) 24 ÷ 10
   e) 467.2 ÷ 100
   f) 25.6 ÷ 1000

Lesson 8: Dividing Decimals Using the Division Algorithm

Group Work

1. Discuss and complete the following using the two methods above.

a)
$$\begin{array}{r} \square.26 \\ 5\overline{)\,36.3} \\ \square\square\_ \\ 13 \\ \square\square \\ 30 \\ \square\square \end{array}$$

b)
$$\begin{array}{r} 3.\square3 \\ 6\overline{)\,21.78} \\ 18\_ \\ \square\square \\ 36 \\ \square8 \\ \square\square \end{array}$$

c) $36.3 \div 5$ = $7 + (\_\_ \div 5)$

= $7 + (\_\_$ tenths $\div 5)$

= $7 + \_$ tenths + (3 tenths + 0 hundredths)

= 7 + 2 tenths + $\_$ _____

= 7 + 2 tenths + 6 hundredths

= 7.26

d) $21.78 \div 6$ = $3 + (\_\_ \div 6)$

= $3 + (\_\_$ tenths $\div 6)$

= 3 + 6 tenths + (_ tenths ÷ 8)

= 3 + 6 tenths + (__ hundredths ÷ 6)

= 3 + 6 tenths + _ hundredths

= ____

Individual Application

1. Solve these division sums using the two methods noted above:

a) $35.64 \div 4$

b) $43.25 \div 5$

2. Solve the following using an algorithm as in (a).

a)
$$\begin{array}{r} 5.73\_\_ \\ 5\overline{)\,28.65} \\ 25 \\ 36 \\ 35 \\ 15 \\ 15 \end{array}$$

b) $29.04 \div 6$

c) $18.69 \div 7$

Additional Exercise

1. Do the following divisions in short form:
   a) 18.56 ÷ 8
   b) 15.04 ÷ 4
   c) 1.65 ÷ 15
   d) 0.198 ÷ 18

Lesson 9: Division of Decimals by Whole Numbers Less Than 20

Group Work

Work together to solve the following.

1. Do the following in contracted form:
   a) 1.8 ÷ 12 b) 1.43 ÷ 18
2. Give the answer to these division equations.
   a) 24.65 ÷ 10
   b) 34.6 ÷ 100
   c) 47.5 ÷ 1000
3. Solve these using the short way:
   a) $15\overline{)\,1.65}$ b) $18\overline{)\,0.198}$

Individual Application

1. Solve these using contracted form:
   a) $15\overline{)\,1.8}$
   b) $20\overline{)\,2.4}$
   c) $16\overline{)\,0.176}$

2. Do these sums in short form:

a) $12\overline{)3.79}$

b) $19\overline{)0.95}$

c) $14\overline{)4.34}$

Additional Exercise

Solve this problem:

Tom wanted to share $1.95 equally among 15 boys. How much would each boy get?

Lesson 10: Assessment

Group Work

Do the following together.

1. Complete the table:

Number	Fractions	Decimals
4 tenths	$\frac{4}{10}$	_____
15 tenths	$\frac{15}{10}$	_____
___ hundredths	$\frac{6}{100}$	.06
___ hundredths	$\frac{125}{100}$	_____
___ thousandths	$\frac{26}{1000}$	_____

2. Add and subtract these sums:

a) 7.42 + 5.64

b) 63.4 – 25.7

3. Complete these sums:
   a) 4.673 x 100
   b) 0.0243 x 1000
   c) 2.4 ÷ 10
   d) 47.5 ÷ 1000
4. Calculate the following:
   a) 36.5 x 15
   b) 4.32 ÷ 12

Individual Application

1. Convert the following fractions to decimals:
   a) $\frac{7}{10}$ c) $\frac{245}{100}$
   b) $\frac{26}{100}$ d) $\frac{1}{2}$
2. Solve these problems:
   a) 25.2 + 4.24 + 3.5
   b) 47.6 – 28.7
3. Calculate the following:
   a) 2.45 x 16
   b) 4.72 ÷ 15
4. Solve the following:
   a) 0.436 x 100
   b) 52.46 ÷ 1000
5. Meere wanted to share $2.80 among 14 girls. How much would each get?

UNIT 6: PERCENTAGES

Lesson 1: Introducing Percentages

Individual Application

Write in figures:

1. eight per cent
2. twenty-four per cent
3. forty-five per cent
4. sixty-eight per cent
5. ninety per cent
6. hundred and twelve per cent
7. two hundred and twenty per cent
8. three hundred and two per cent

Additional Exercise

Write the correct answer in the space provided.

1. Fifty-four per cent means __% or 54 per _____.
2. 70% means __ per cent or seventy ___ hundred.
3. Eighty-six per ____ means 86 _ or __ per hundred.
4. One hundred and five per ____ means 105 _ or 105 per _____.
5. Two hundred ___ cent means ___ % or ___ per hundred.
6. Two hundred and ___ per cent means 210% or 210 ___ hundred.

Lesson 2: Writing Percentages as Fractions and Vice Versa

Individual Application

1. Match the percentage or fraction in A with its pair in column B.

A	B
40%	$\frac{7}{10}$
75%	80%
30%	5%
$\frac{4}{5}$	$\frac{2}{5}$
$\frac{9}{10}$	$\frac{3}{10}$
$\frac{1}{5}$	90%
70%	$\frac{3}{4}$
$\frac{1}{20}$	20%

Additional Exercise

1. Change these percentages to fractions.
   a) 45%
   b) 80%
   c) 65%
   d) 12%
   e) 50%
2. Change these fractions to percentages: eg: $\frac{1}{2} \times \frac{50}{50} = \frac{50}{100}$
   a) $\frac{1}{5}$
   b) $\frac{3}{10}$
   c) $\frac{1}{4}$
   d) $\frac{3}{5}$
   e) $\frac{7}{10}$

Lesson 3: Writing Percentages as Decimals and Vice Versa

Individual Application

Fill in this table :

Percentage	Fraction	Decimal
40%	$\frac{2}{3}$	_____
____	$\frac{1}{2}$	0.5
____	$\frac{1}{4}$	_____
_____	$\frac{1}{50}$	0.02
35%	$\frac{7}{20}$	0.35
75	$\frac{3}{4}$	_____
_____	$\frac{4}{5}$	_____
_____	$\frac{2}{25}$	0.08

Additional Exercise

1. Change these percentages into decimals.
   a) 20%
   b) 6%
   c) 45%
   d) 9%
   e) 60%
2. Change these decimals into percentages.
   a) 0.03
   b) 0.15
   c) 0.8
   d) 0.28
   e) 0.36

Lesson 4: Finding a Percentage of a Number

Individual Application

Fill in the boxes to complete the work below.

1. 10% of 30

   $= \frac{10}{100} \square \frac{30}{1}$

   $= \frac{1}{10} \times \frac{30}{1}$

   $= \frac{1}{10} = 3$

   Answer = 3

2. 50% of ☐

   $= \frac{50}{100} \times \frac{46}{1}$

   $= \frac{1}{2} \times \frac{46}{1}$

   $= \frac{46}{2}$

   Answer = ☐

3. ☐ of 50

   $\frac{20}{100} \times \frac{50}{1}$

   $\frac{1}{5} \times \frac{50}{1}$

   $= \frac{50}{5}$

   = 10

4. 75% of 84

   $= \frac{75}{100} \times \frac{84}{1}$

   $= \frac{3}{4} \times \frac{84}{1}$

   $= \frac{252}{4}$

   = ☐

5. 25☐ of 124

   $= \frac{25}{100} \times \frac{124}{1}$

   $= \frac{1}{4} \times \frac{124}{1}$

   $= \frac{124}{4}$

   = 31

Additional Exercise

Find each percentage.

1. What is 30% of 150? ___
2. What is 80% of 200? ___
3. There were 28 questions set in a Maths Test. 75% of them were answered. How many questions were:
   a) answered? _____
   b) not answered? _____
4. A kerosene stove cost $80.00. A discount of 30% was made on the cost of this stove.
   a) How much money was the discount? _____
   b) What was the new cost of the stove? _____
5. There were 50 members in a table tennis club. 20% were absent in the competition.
   a) How many members were absent? ___
   b) How many members attended the competition? ___

Lesson 5: Finding the Original Number When a Percentage is Known

Individual Application

Match the problem with the original number.

	A	B
1.	5% of n = 3	n = 110
2.	15% of n = 12	n = 120
3.	40% of n = 30	n = 60
4.	50% of n = 55	n = 75
5.	60% of n = 75	n = 125
6.	70% of n = 84	n = 80

Additional Exercise

Work out the following:

1. If 40% of n = 26, what is n? ___
2. If 50% of n = 60, what is n? ___
3. 70% of the birds are blue. How many birds are there altogether if there are 28 blue ones? _____
4. 20% of the teachers in a school wear glasses. How many teachers are there altogether in the school if 3 of them wear glasses? ___
5. 12% of the animals are cats. How many animals are there altogether if there are 9 cats? _____

Lesson 6: More Practice in Finding the Original Number When a Percentage is Known

Individual Application

Circle the correct answer:

1. 20% of n = 21.1
   (a) 105.1
   (b) 105.5
   (c) 105.25
   (d) 1055

2. 40% of n = $48.00
   (a) $120.00
   (b) $12.00
   (c) $124.00
   (d) $1.20

3. 50% of n = $62.00
   (a) $12.40
   (b) $1.24
   (c) $124.00
   (d) $12.04

4. 80% of n = 10
   (a) 125.5
   (b) 125
   (c) 1.25
   (d) 12.5

5. 90% of n = 90.9
   (a) 10.1
   (b) 101
   (c) 1.01
   (d) 100.1

Additional Exercise

Write an equation for each question, then solve it. Read the examples first.

1: Eleven is 55% of what number?

$11 = 55\%$ of n

$11 = \frac{55}{100} \times \frac{n}{1}$

$11 = \frac{11}{20} \times n$

$11 \times 20 = 11n$

$20 = n$

2. 2% of what number is 18 ?

$2\frac{1}{2}\%$ of n = 18

$2\frac{1/2}{100} \times \frac{n}{1} = 18$

$\frac{5/2}{100} \times \frac{n}{1} = 18$

$\frac{5}{200} \times \frac{n}{1} = 18$

$\frac{1}{40} \times n = 18$

$\frac{1n}{40} \times \frac{40}{1} = 18 \times 40$

$n = 720$

1. 15 is 75% of what number?
2. 8 is 40% of what number?
3. 7 is 5% of what number?
4. 66 is 3% of what number?
5. 36 is 12% of what number?

Lesson 7: Finding What Percentage of One Number is Another Number

Individual Application

Write the equation and then solve:

1. What percentage of 20 is 5?
2. What percentage of 16 is 8?
3. Seven is what percentage of 25?
4. What percentage of 24 is 12?
5. What percentage of 375 is 125?

Additional Exercise

Match the question to the answer.

1.	What percentage of 5 hrs. is 30 mins?	25%
2.	What percentage of $3.40 is 85 cents?	5%
3.	What percentage of 300 is 48?	75%
4.	What percentage of 8 is 0.4?	10%
5.	What percentage of 48 is 36?	16%

Lesson 8: More Work on Finding What Percentage of One Number is Another

Individual Application

Work out the following:

1. What percentage of 36 is 27?
2. What percentage of 40 is 16?
3. What percentage of 70 is 14?
4. What percentage of $2.00 is 80¢?
5. What percentage of 1 litre is 840 mls?

Additional Exercise

Write Yes or No.

1. 45 out of 50 as a percentage = 80%
2. $35 out of $70 as a percentage = 50%
3. Maata scored 64 marks out of 80 in an English test. Her score expressed as a percentage is 80%.
4. There are 40 pupils in a class. 14 of them are absent. The number of absentees expressed as a percentage is 12%.
5. 14 out of 70 expressed as a percentage = 20%

Lesson 9: Solving Percentage Problems

Group Work

Divide the children into a group of five or six. Give each group a chart to do their work on.
They solve the problems following the steps given in the teacher's example in Teaching for Understanding (above).

1. In a test, Maria scored 44 marks out of 55. What percentage is this ? Solve this question following the steps of the teacher's example (1).
2. There are 50 choir members, 20% of them are absent. How many are:
   a) absent?
   b) present?

   Each member has to do one of the steps to solve the problem as in the teacher's example (2).

Display each group work results for other groups to check. Hang up charts for future use.

Individual Application

Solve these problems:

1. Kelly earns $20 a week. If she saves 15% of her salary, how much does she save over 1 year?
2. In an examination, 75% of a class of 32 students passed. How many students passed?
3. In a week of 40 periods, 6 periods are given to English. What percentage of the school week is spent on English?
4. In a table tennis club with 80 members, 55% are girls. How many boys are in the club?
5. Atata got 42 out of 70 in a Maths test. What is her mark expressed as a percentage?

Additional Exercise

Work out these problems:

1. Taam caught 45 fish. He sold 18 fish to his neighbours and he kept the rest. What percentage of his catch:

   a) did he sell? b) did he did not sell?

2. There are 280 students in Meere's school. 25% are boys. How many are:

   a) boys? b) girls?

3. Max got 36 out of 60 marks in a maths test and 56 out of 80 in an English test. In which subject did Max get the best mark, expressed as a percentage?

4. In a box there are 35 apples, 20% of them are rotten:

   a) How many rotten apples are there?
   b) How many are there that are not rotten?

5. Miita saved $270. He spent $60 on decorations. What percentage of his money:

   a) did he spend? b) did he keep in his savings account?

Lesson 10: Assessment

Group Work

1. Your teacher will give you some work cards to answer together.
2. Write these as a percentage (%).

   a) 25 per cent

   b) 56 per hundred

   c) 84 per cent

   d) 104 per cent

   e) 138 per hundred

3. Write these percentages as fractions in their simplest form.

   a) 15%

   b) 64%

   c) 75%

   d) 80%

   e) 92%

4. Change these fractions into percentages.
   a) $\frac{3}{5}$
   b) $\frac{3}{10}$
   c) $\frac{1}{20}$
   d) $\frac{7}{10}$
   e) $\frac{1}{4}$

5. Write these decimals as percentages.
   a) 0.4
   b) 0.35
   c) 0.2
   d) 0.75
   e) 0.9

6. Change these percentages into decimals.
   a) 12%
   b) 24%
   c) 86%
   d) 116%
   e) 108%

7. Find the percentage of these numbers.
   a) 10% of 60
   b) 25% of 200
   c) 30% of 250
   d) 50% of 112

8. Find the original number (n).
   a) 20% of n = 13
   b) 40% of n = 36
   c) 75% of n = 72
   d) 80% of n = 80

9. Write the equation and then solve.

   a) What percentage of 36 is 18?

   b) what percentage of 48 is 12?

   c) what percentage of 120 is 18?

   d) what percentage of 140 is 112?

10. Solve these problems :

   a) Sam gained 33 out of 60 marks in a science test. Give his mark as a percentage.

   b) Peter had $140. He spent 30% of it on school items:

      (i) How much did he spend?
      (ii) How much money was there left?

   c) 35 children in Class 6 sat an examination in maths. 14 of them passed:

      (i) What percentage of children passed the test?

      (ii) How many did not pass?