

PlusOne | Serious Revision

Mathematics



$$\frac{3}{5} \times \frac{6}{9}$$



Grade
7



Plus One | Serious Revision

Mathematics

Revision Guide
With answers

Grade
7

 **SECONDARY
BOOK PRESS**

Anchors of the schools curricula

Published by:

Secondary Book Press Private Limited

4th Floor, CABS Centre Building,

Cnr Jason Moyo & 2nd Street,

Harare, Zimbabwe

Tel: +263 242 771 406 | +263 242 753 201

Mobile: +263 712 560 870 | +263 788 954 870

Email: sales@secondarybookpress.co.zw

Website: www.secondarybookpress.co.zw

PlusOne Serious Revision Mathematics | Grade 7 – Revision Guide (With answers)

ISBN: 978-1-77932-292-0

First Published in 2026

Copyright @ Secondary Book Press

Editor-in-Chief: Munyaradzi Gunduza

Development Editor: Reggies Chapwanya

Design and text layout: Patricia N. Munemo

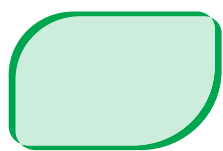
Every effort has been made to trace the copyright holders. In the event of unintentional omissions or errors, any information that would enable the publisher to make the proper arrangements will be appreciated.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior permission of the copyright owner.

Contents

Introduction	i
Topic 1: Number.....	1
Unit 1: Whole number.....	1
Unit 2: Proper fractions	11
Unit 3: Mixed numbers	18
Unit 4: Decimal numbers	23
Unit 5: Percentages.....	30
End of topic 1 examination paper 1	36
paper 2	41
School based project 1	43
Topic 2: Operations	46
Unit 6: Addition of whole numbers.....	46
Unit 7: Subtraction of whole numbers	52
Unit 8: Multiplication of whole numbers.....	57
Unit 9: Division of whole numbers	64
Unit 10: Multiplication of fractions and mixed numbers.....	68
Unit 11: Addition and subtraction of proper fractions and mixed numbers	72
Unit 12: Addition and subtraction of decimals.....	79
Unit 13: Multiplication and division of decimal numbers	84
Unit 14: Combined operations	88
End of topic 2 examination paper 1	92
paper 2	96
School based project 2	99
Topic 3: Measures	102
Unit 15: Money	102
Unit 16: Time and rate.....	112
Unit 17: Mass	118
Unit 18: Length, perimeter and area.....	123
Unit 19: Shapes	130
Unit 20: Volume and capacity	135
Unit 21: Direction, angles and lines	140
End of topic 3 examination paper 1	145
paper 2	149
School based project 3	151

Topic 4: Relationships	154
Unit 22: Data handling	154
End of topic 4 examination paper 1	159
paper 2	165
School based project 4	168
Specimen papers	
Examination practice 1 Paper 1	172
Paper 2	179
Examination practice 2 Paper 1	183
Paper 2	188
Examination practice 3 Paper 1	191
Paper 2	196
Examination practice 4 Paper 1	199
Paper 2	204
Examination practice 5 Paper 1	207
Paper 2	213
Examination practice 6 Paper 1	216
Paper 2	222
Examination practice 7 Paper 1	225
Paper 2	230
Examination practice 8 Paper 1	233
Paper 2	237
Examination practice 9 Paper 1	239
Paper 2	244
Examination practice 10 Paper 1	247
Paper 2	252
Answers to Unit exercises and End of topic examinations	255
Answers to Examination Practices 1-10: Paper 1	278
Paper 2	279



Introduction

How to use this Grade 7 Mathematics Revision Guide

PlusOne Mathematics Grade 7 Revision Guide has been carefully developed to support effective revision of Mathematics ahead of the final ZIMSEC examination. The book provides comprehensive notes, clear guidelines, worked examples and solid multiple-choice and structured exercises for every concept.

The book contains notes, guidelines, examples and multiple choice questions and structured questions for every concept in the syllabus from Grade 3 to 7. It has 10 typical ZIMSEC final examination practices which collectively cover Topics 1–4 from Grades 3 to 7 of the Heritage Based Curriculum (HBC) in every examination practice. These examination practices are not separated by topic but are designed to progressively revise content across grade levels, ensuring continuity and depth of understanding.

All questions are developed using a spiral approach, beginning with simple concepts and basic skills, then gradually increasing in complexity to test understanding, application, reasoning and problem-solving skills. This approach allows learners to build confidence while steadily preparing for examination demands.

The examination practices are structured to help learners:

- consolidate knowledge across multiple grade levels.
- recognise connections between related concepts.
- transition smoothly from lower-level skills to higher-order Mathematical thinking.
- become familiar with examination-style questions through repeated, structured practice.

Examination alignment

The content of this book is strictly syllabus-based, ensuring that learners study exactly what is required for assessment. Emphasis has been placed on syllabus depth rather than repetition, enabling learners to handle examination and specimen questions with confidence.

All notes, examples and exercises are aligned to:

- School Based Continuous Assessment (SBCA) requirements.
- ZIMSEC Summative Assessment expectations.
- Official examination formats for Paper 1 and Paper 2.

To benefit fully from this revision guide, learners should:

- study one Mathematics topic at a time,
- read and understand notes carefully,
- work through examples step by step,
- practise all multiple choice and structured questions,

- show all working clearly where required,
- revise regularly, not only before examinations,
- use the guide together with the learner's book and teacher's explanations,
- refer to the answers section for effective self-study.

Facilitators can use this guide to:

- support lesson delivery and remediation,
- set classwork, homework, revision tasks and tests,
- guide learners during School Based Continuous Assessment (SBCA),
- prepare learners for summative and external examinations.

About the subject

Mathematics is a subject that develops logical thinking, reasoning and problem-solving skills. It helps learners understand numbers, relationships, measurements and patterns used in everyday life. Through studying Mathematics, learners can:

- use numbers confidently in real-life situations,
- perform accurate calculations and estimations,
- interpret tables, graphs and charts,
- solve practical problems logically and systematically,
- develop critical thinking and decision-making skills.

PlusOne Serious Revision Mathematics Revision Guide has been written specifically for learners and facilitators. Concepts are explained clearly using simple language, worked examples and step-by-step methods, making revision easy and effective for both continuous assessment and examinations.

1 Paper 1

Paper 1 is a multiple choice paper. Key information includes:

- It consists of 40 multiple choice questions.
- All questions must be answered.
- Each question has four options with only one correct answer.
- It assesses learners' ability to:
 - recall Mathematical facts and terms,
 - understand concepts,
 - apply skills in straightforward situations.

This revision guide supports learners by:

- defining key Mathematical terms.
- summarising important rules and procedures.
- providing adequate practice across all syllabus topics.

Class strategies and activities in revising Mathematics

Effective Mathematics revision requires active participation. Useful strategies include:

- guided problem-solving sessions,
- group discussions and peer teaching,
- use of number lines, diagrams and models,
- practice of worked examples and exercises,
- timed tests and past examination questions.

These strategies help learners consolidate concepts, improve accuracy and gain confidence in solving Mathematical problems.

Role of the facilitator in revising Mathematics

The facilitator plays a key role in guiding learners throughout the revision process. The teacher should:

- explain Mathematical concepts clearly and logically.
- demonstrate correct methods and procedures.
- provide sufficient practice and timely feedback.
- identify learners who need remediation or extension.
- accommodate learners with special needs through appropriate modifications.

Mathematics assessment follows School Based Continuous Assessment (20%) and Summative Assessment (80%) in line with the Heritage Based Curriculum. Assessment adheres to the principles of inclusivity, practicability, authenticity, transparency, flexibility, validity and reliability.

Suggested assessment tools

- Checklists
- Observation schedules
- Tests
- Rating scales
- Exercises
- Practical activities
- School-based projects
- Learner profiling portfolios

Examination tips for Mathematics

Learners are encouraged to:

- start revising early and consistently.
- practise calculations regularly.
- understand mathematical command words such as *calculate, state, show, explain and solve*.
- read questions carefully and follow instructions.
- answer according to the marks given and show all working.
- manage time effectively during examinations.
- practise past examination and specimen papers.
- remain calm and confident during tests.

Final advice

- Attend Mathematics lessons regularly.
- Ask for clarification when concepts are not understood.
- Practise daily to improve accuracy and speed.
- Believe in your ability to succeed in Mathematics.

Unit 1

Whole number

Unit objectives

By the end of this unit, learners should be able to:

- read/sign numbers in words and numerals.
- write numbers in words and numerals.
- express numbers in expanded notation/form.
- count in ascending and descending order.
- arrange numbers in order of magnitude.
- give values of digits in a number.
- write ordinal numbers up to hundredth.
- use ordinal numbers in ranking and positioning.
- write ordinal numbers in words and numerals.
- write number sequences.
- identify prime numbers in the range 0 to 100.
- find prime factors of numbers in the range 0 – 100.
- approximate numbers.
- compare numbers.
- convert Roman numerals to Arabic numerals within the range and vice versa.

Numeration system

There is a great need to know how to express digits in words and vice versa. You should be able to read both the Roman numerals up to L (50) and Arabic numerals up to 10 000 000. For example,

One	1	I
Three	3	III

Five	5	V
Eleven	11	XI
Nineteen	19	XIX
Twenty-two	22	XXII
Forty-five	45	XXXXV
Fifty	50	L

Example 1.1

Express 4 971 325 in words.

Solution

M	HTh	TTh	Th	H	T	U
4	9	7	1	3	2	5

Four million, nine hundred and seventy-one thousand three hundred and twenty-five.

Example 1.2

Express 5 312 974 in words.

Solution

M	HTh	TTh	Th	H	T	U
5	3	1	2	9	7	4

Five million, three hundred and twelve thousand nine hundred and seventy-four.

Example 1.3

Express 6 281 122 in words.

Solution

M	HTh	TTh	Th	H	T	U
6	2	8	1	1	2	2

Six million, two hundred and eighty-one thousand one hundred and twenty-two.

Example 1.4

Express, four million, five hundred and seventy-three thousand four hundred and twelve in digits.

Solution

4 573 412.

Example 1.5

Six million, six hundred and thirty thousand six hundred and forty-six in digits.

Solution

6 630 646.

Example 1.6

Fifteen million and sixty-four in digits.

Solution

15 000 064.

Exercise 1.1

- Express the following in words.

(a) 542	(e) 5 132 412
(b) 16 283	(f) IX
(c) 152 758	(g) XXV
(d) 769 312	(h) XLV
- Express the following in words.

(a) One hundred and seventy six.
(b) Six hundred and fifty seven thousand and nine hundred and seven.
(c) One million six hundred and thirty four.

Place value of digits

- Each **digit** in a number can have the **value**.
- The values range from: Millions (M), Hundred Thousands (HTh), Ten Thousands (TTh), Thousands (T), Hundreds (H), Tens (T) and Units (U).

M	HTh	TTh	Th	H	T	U
---	-----	-----	----	---	---	---

Example 1.7

State the value of 6 in 46.

Solution

T	U
4	<u>6</u>

The value of 6 is units.

Example 1.8

State the value of 7 in 376.

Solution

H	T	U
3	<u>7</u>	2

The value of 7 is tens.

Example 1.9

State the value of 4 in 51 428.

Solution

TTh	Th	H	T	U
5	1	<u>4</u>	2	8

The value of 4 is hundreds.

Example 1.10

State the value of 6 in 1 326 579.

Solution

M	HTh	TTh	Th	H	T	U
1	3	2	<u>6</u>	5	7	9

The value of 6 is thousands.

Example 1.11

State the value of 4 in 8 140 000.

Solution

M	HTh	TTh	Th	H	T	U
8	1	<u>4</u>	0	0	0	0

The value of 4 is ten thousands.

Exercise 1.2

Find the value of the underlined digit.

- 12 976
- 591 228
- 132 674
- 5 143 339
- 3 446 327
- 1 472 911
- 6 126 427
- 540 234
- 326 772
- 63 121 978

Number notation

Number notation is the method of expressing numbers to clearly show the total value of every digit based on its position. By expanding a number, we break it down into its constituent parts, making it easier to read and manipulate. There are three primary ways to show number notation for whole numbers and decimals.

To expand numbers correctly, you must first identify the place value of each digit. For whole numbers, we work from right to left (Units, Tens, Hundreds, and so on.). For decimals, a comma or decimal point separates the whole numbers from the fractional parts (Tenths, Hundredths, Thousandths).

Method 1: Expansion using values

In this method, we simply write the value of each digit as a sum. A helpful tip is to write the digit and then replace all following digits with zeros until you reach the decimal comma.

Method 2: Expansion using multipliers

This method shows the digit multiplied by its place value (for example, 100, 10 or 1). This clearly demonstrates how many of each "unit" makes up the total number.

Method 3: Expansion using index notation

As per the syllabus requirements, we use powers of 10 inside brackets. This is the most advanced form of notation for Grade 7.

Example 1.12

Expanding a whole number (7 digits)

Write 3 405 216 in expanded notation using values.

Stage 1:

Identify values: 3 000 000; 400 000; 0; 5 000; 200; 10; 6.

Stage 2:

Write as a sum.

Solution:

$$3\,000\,000 + 400\,000 + 5\,000 + 200 + 10 + 6.$$

Example 1.13

Expanding a decimal using fractions

Expand 52,38 using the multiplier method with fractions.

Stage 1:

Identify place values: 5 is Tens (5 times 10), 2 is Units (2 times 1), 3 is Tenths ($3 \times \frac{1}{10}$), 8 is Hundredths ($8 \times \frac{1}{100}$).

Stage 2:

Combine into a sentence.

Solution:

$$(5 \text{ times } 10) + (2 \times 1) + (3 \times \frac{1}{10}) + (8 \times \frac{1}{100}).$$

Example 1.14

Expanding using decimals

Show 7,409 in expanded notation using decimal values.

Working:

7 (Units) + 0,4 (Tenths) + 0,00 (Hundredths) + 0,009 (Thousandths).

Solution:

$$7 + 0,4 + 0,009.$$

Example 1.15

The number 23 574 in expanded form can be written as:

Standard expanded form:

$$20\,000 + 3\,000 + 500 + 70 + 4$$

Expanded index notation:

$$(2 \times 10^4) + (3 \times 10^3) + (5 \times 10^2) + (7 \times 10^1) + (4 \times 10^0)$$

Exercise 1.3

1. Expand 12 504 using the value method.
2. A farmer harvested 6 782 kg of maize. Show this number using multipliers and brackets.
3. Write 0,45 in expanded notation using fractions.
4. Expand "two million, three hundred thousand and twelve" using index notation.
5. What is the value of the missing term:
 $45,23 = 40 + 5 + 0,2 + ?$
6. A school's bus levy is 1 250,50 ZiG. Expand this amount to show the value of the cents.
7. Use the multiplier method to expand 9 001.
8. Convert this expansion into a single number:
 $700 + 2 + \frac{9}{10} + \frac{5}{1\,000}.$
9. Expand 15,125 using decimal values.
10. A truck travelled 805,06 km. Expand this distance using any method of your choice.

Number sequence

Example 1.16

Find the missing number in the sequence:

2, 4, 6, $\square$, 10.

Solution

Method 1: The sequence shows multiples of 2.

$$2 \times 1 = 2$$

$$2 \times 2 = 4$$

$$2 \times 3 = 6$$

$$2 \times 4 = 8$$

$$2 \times 5 = 10$$

The sequence becomes 2, 4, 6, 8, 10.

Method 2: The next term is found by adding 2 to the previous number.

$$2 + 0 = 2$$

$$2 + 2 = 4$$

$$4 + 2 = 6$$

$$6 + 2 = 8$$

$$8 + 2 = 10$$

Example 1.17

Arrange the numbers in descending order : 980, 1020, 567, 23, 5678, 2349, 989, 1200, 675.

Solution

Descending order refers to rank which ranges from highest to smallest number.

5 678, 2 349, 1 200, 1 020, 989, 980, 675, 567, 23.

Example 1.18

Arrange the numbers in ascending order: 980, 1 020, 567, 23, 5 678, 2 349, 989, 1 200, 675.

Solution

Ascending order refers to rank which ranges from smallest to highest number.

23, 567, 675, 980, 989, 1 020, 1 200, 2 349, 5 678.

Prime numbers

- **Prime numbers** are those numbers that can only be divided by 1 and themselves.
- Examples are 1; 2; 3; 5; 7; 11; 13; 17; 19; 23; 29; 31 and so on.
- Some prime numbers are also **odd numbers**.
- An **odd number** is a number which leaves a remainder when divided by 2.
- **Even numbers** are numbers that are divisible by 2.
- 2 is both an even number and a prime number. No other number can divide 2 except 2 and 1.

Exercise 1.4

1. Write down all the odd numbers in the range 45 to 56.
2. List all the even numbers between 123 and 135.
3. Write down all the prime numbers from 30 to 50.

Approximation and estimation

- Numbers can be **rounded off to the nearest** 10; 100; 1 000; 10 000; 100 000; 1 000 000.
- **Identify the position** of a number to be rounded off in an imaginary number line.
- If the number next to the target place value is above 4, **round up** by adding a unit to the left hand side digit.
- If the number next to the target place value is below 4, **round down** by adding zero to the left hand side digit.

Example 1.19

Round off 27 to the nearest 10.

Solution

27 rounded off to the nearest 10 is 30.

Example 1.20

Round off 724 to the nearest 10.

Solution

724 rounded off to the nearest 10 is 720.

Example 1.21

Round off 75 to the nearest 10.

Solution

75 rounded off to the nearest 10 is 80.

Example 1.22

Round off 532 to the nearest 10.

Solution

532 rounded off to the nearest 10 is 530.

Example 1.23

Round off 15 289 to the nearest 10.

Solution

15 289 rounded off to the nearest 10 is 15 290.

Example 1.24

Round off 741 153 to the nearest 100.

Solution

742 153 rounded off to the nearest 100 is 742 200.

Example 1.25

Round off 87 899 to the nearest 1 000.

Solution

87 899 rounded off to the nearest 1 000 is 88 000.

Example 1.26

Round off 287 423 to the nearest 100 000.

Solution

287 423 rounded off to the nearest 100 000 is 300 000.

Exercise 1.5

Round off :

1. 324 to the nearest 10.
2. 486 to the nearest 10.
3. 176 to the nearest 100.
4. 3 198 to the nearest 100.
5. 9 132 to the nearest 1 000.
6. 54 186 to the nearest 10 000.
7. 221 314 to the nearest 100 000.
8. 9 121 656 to the nearest 1 000 000.
9. 9 312 534 to the nearest 1 000 000.
10. 3 768 to the nearest 1 000.

Comparison of numbers

In order to compare numbers, these three signs are used $>$; $<$ and $=$.

Comparison symbol	Meaning
$>$	greater than
$<$	smaller than
$=$	equal to

Below are true statements.

- $4 < 7$ which means 4 is less than 7.
- $66 > 9$ which means 66 is greater than 9.
- $60 = 35 + 25$ which means the value of 35 added to 25 is equal to 60.

Example 1.27

Replace $\square$ with $<$, $>$ or $=$ sign to make the statement correct in $213 \square 321$.

Solution

213 is less than 321.

321 is greater than 213.

$213 < 321$

Example 1.28

Replace $\square$ with $<$, $>$ or $=$ sign to make the statement correct in $423 \square 234$.

Solution

234 is less than 423.

423 is greater than 234.

$423 > 234$

Example 1.29

Replace $\square$ with $<$, $>$ or $=$ sign to make the statement correct in $432 + 168 \square 440 + 160$.

Solution

$432 + 168 = 600$

$440 + 160 = 600$

$432 + 168 = 440 + 160$

Example 1.30

Replace $\square$ with $<$, $>$ or $=$ sign to make the statement correct in $95 \square 354$.

Solution

95 is less than 354.

354 is greater than 95.

$95 < 354$

Exercise 1.6

Replace $\square$ with $<$, $>$ or $=$ to make each statement correct.

1. $543 \square 701$
2. $199 \square 654$
3. $9\,989 \square 22\,132$
4. $332 \square 800$
5. $9\,001 \square 8\,100$
6. $23 \times 2 \square 40 + 5$

Ordinal numbers

Ordinal numbers tell the position, rank or the order of things. Numbers that give quantity are called cardinal numbers. Ordinal numbers follow patterns in their suffixes. In real-life situations, ordinal numbers allow us to describe the positions of people, objects or events in a sequence.

- Numbers ending in 1 (except 11): use “st” (1st, 21st, 31st...)
- Numbers ending in 2 (except 12): use “nd” (2nd, 22nd, 32nd...)
- Numbers ending in 3 (except 13): use “rd” (3rd, 23rd, 33rd...)
- All other numbers: use “th” (4th, 5th... 11th, 12th, 13th... 20th, 100th)

Example 1.31

1st (first), 2nd (second), 3rd (third), 4th (fourth), 10th (tenth), 20th (twentieth), 30th (thirtieth), 40th (fortieth), 21st (twenty-first), 32nd (thirty-second), 43rd (forty-third), 54th (fifty-fourth).

Real-life situations

1. Zimbabwe celebrated its 46th Independence Day in 2026.
2. The 100th customer will receive a special prize.
3. She finished in 21st place in the marathon.
4. Chiedza came 1st in the Mathematics competition.
5. Harare is the 4th most populous city in Southern Africa.

Exercise 1.7

1. Write the following ordinal numbers in digits:
 - (a) One hundredth
 - (b) Sixty-second
 - (c) Eighty-first
2. Write the full word for each of these ordinal numbers:
 - (a) 11th

(b) 45th

(c) 20th

3. Imagine a queue of 15 people. Your friend is standing in the 7th position. How many people are standing behind your friend?
4. In a class race, Sam came 15th and Ruth finished 1st. What ordinal number position is between 18th and 20th?
5. March is the _____ month of the year.
6. In a class of 40 learners, Nomsa was very fast such that she was the _____ to finish the class test.
7. The following athletes competed a race in the seconds given. Write their positions using ordinal numbers:
 - (a) Robert 18,5 seconds
 - (b) Siphos 19,0 seconds
 - (c) Tendai 17,8 seconds

Unit revision exercises

Multiple choice questions

1. 2 324 879 written in words is _____.
 - A. two million, three hundred and twenty-four and eight hundred and nine.
 - B. two million, three thousand two hundred and twenty-four and eight hundred and seventy-nine.
 - C. two million, three hundred and twenty-four thousand eight hundred and nine.
 - D. two million, three hundred and twenty-four thousand eight hundred and seventy-nine.
2. Four million, three hundred thousand and thirty-seven written in numerals is _____.
 - A. 4 000 000 37
 - B. 4 000 0037
 - C. 4 300 037
 - D. 4 000 37

3. Find the missing number in the sequence.

500 324 500 424 500 524
500 624 □ 500 824

- A. 500 224
B. 500 524
C. 500 724
D. 500 924

4. Chipo won a race, defeating 3 other athletes. Her position in ordinal number was _____.

- A. 4th
B. 3rd
C. 2nd
D. 1st

5. 832 121 732 121 632 121 532 121
432 121 □. The missing number is _____.

- A. 932 121
B. 332 121
C. 231 122
D. 132 121

6. Who is the sixth boy in the list?

Samson Joe David Ben
Henry Themba Jabu Musa

- A. Samson
B. Musa
C. Themba
D. Henry

7. 43 213; 35 312; 74 013; 34 210; 9 0 132; 8 989; 27 006 and 81 455 written in the correct ascending order is _____.

- A. 43 213; 35 312; 74 013; 34 210; 90 132; 8 989; 27 006; 81 455
B. 8 989; 27 006; 34 210; 43 213; 35 312; 74 013; 90 132; 81 455
C. 8 989; 27 006; 34 210; 35 312; 43 213; 74 013; 81 455; 90 132;
D. 90 132; 81 455; 74 013; 43 213; 35 312; 34 210; 27 006; 8 989;

8. What is the value of the underlined digit in 275 384?

- A. Unit.
B. Tens.
C. Hundreds.
D. Ten thousand.

9. What is the value of 10^3 ?

- A. 1 000
B. 130
C. 10 000
D. 100

10. Which of the following statement is true?

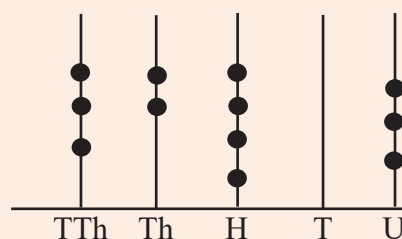
- A. $27\,531 = (2 \times 10^4) + (7 \times 10^3) + (5 \times 10^2) + (3 \times 10^1) + (1 \times 10^0)$
B. $27\,531 = (2 \times 10^5) + (7 \times 10^4) + (5 \times 10^3) + (3 \times 10^2) + (1 \times 10^1)$
C. $27\,531 = (2 \times 10^3) + (7 \times 10^2) + (5 \times 10^1) + (3 \times 10^1) + (1 \times 10^0)$
D. $27\,531 = (2 \times 10^6) + (7 \times 10^5) + (5 \times 10^4) + (3 \times 10^3) + (1 \times 10^2)$

11. What number is represented below?

H	T	U

- A. 999
B. 304
C. 403
D. 695

12. State the number shown by the diagram below.



- A. 21 3111
B. 21 321
C. 31 310
D. 32 403

13. Replace $\square$ to make the statement $978\ 432 \square$ $1\ 003\ 002$ true.

- A. $<$
- B. $>$
- C. $=$
- D. $\times$

14. Which one of these is a multiple of 2?

- A. 234 122
- B. 657 437
- C. 786 231
- D. 98 673

15. $\text{||||} \text{||||} \text{||||} \text{|||}$ represents _____.

- A. 12
- B. 15
- C. 17
- D. 18

16. 968 546 written in expanded form is

- A. $900\ 000 + 60\ 000 + 8\ 000 + 500 + 40 + 6$
- B. $90\ 000 + 60\ 000 + 8\ 000 + 500 + 40 + 6$
- C. $900\ 000 + 60\ 000 + 8\ 000 + 500 + 40 + 60$
- D. $900\ 000 + 60\ 000 + 8\ 000 + 50 + 40 + 6$

17. _____ is a square number.

- A. 80
- B. 81
- C. 91
- D. 101

18. Choose a set of numbers with only prime numbers.

- A. 3 5 7 9 11 15 17
19 21
- B. 3 5 7 11 15 17 19
21 22
- C. 3 7 11 17 19 23 29
31 37
- D. 11 15 17 19 21 24 34
37 41

19. The odd numbers between 213 460 and 213 468 are _____.

- A. 213 462; 213 464; 213 466; 213 468
- B. 213 461; 213 463; 213 465; 213 467
- C. 213 461; 213 462; 213 463; 213 464
- D. 213 463; 213 464; 213 465; 213 467

20. State the value of the underlined digit in 9 765 342.

- A. 9 000 000
- B. 9 000 00
- C. 90 000
- D. 9 000

Structured questions

Answer **all** the questions. Show all working, omission of essential working may result in loss of marks.

1. Write the numbers below in words.

- (a) 176
- (b) 657 907
- (c) 1 000 634

2. Express the following in numerals.

- (a) Three hundred and seven thousand and fifteen.
- (b) Two million, three hundred thousand and ninety-six.
- (c) Four hundred and twenty-six thousand, eight hundred and seventy-nine.

3. Arrange in correct descending order.

231 235 76 213 32 980
9 324 122 60 600 55 891

4. Give any three square numbers between 1 and 10.

5. Complete these number sequences by filling in the missing number.

- (a) 213 543 313 544 413 545
513 546 $\square$
- (b) 13 26 39 52 $\square$

6. What number is shown below?

TTh	Th	H	T	U
••	•••	•••	••	••

(b)



7. State the value of the underlined digit.

(a) 986 346

(b) 89 397

(c) 2 786 394

(d) 1 324 989

8. Expand the numbers.

(a) 245

(b) 123 747

(c) 7 392 458

9. Evaluate.

(a) 3^3 .

(b) 10^4

(c) 5^3

10. $657 = (6 \times 10^2) + (5 \times \square) + (7 \times \square)$

Unit 2

Proper fractions

Unit objectives

By the end of this unit, learners should be able to:

- identify proper fractions with denominators in the given range.
- read/sign fractions with denominators in the given range.
- write fractions with denominators in the given range.
- compare fractions and arrange them in order of size.
- interpret diagrams representing proper fractions.
- arrange proper fractions in order of size.
- convert proper fractions to decimals.
- simplify proper fractions to their lowest terms.

Proper fractions

- Proper fractions have a numerator (top number) and a denominator (bottom number).
- For example, in $\frac{1}{2}$ the top digit 1 is the numerator and the bottom number 2 is the denominator.
- $\frac{1}{2}$ is a proper fraction. In a proper fraction, a numerator is smaller than the denominator.

Example 2.1

State the digit that is a numerator in the following fractions.

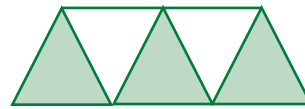
(a) $\frac{3}{10}$
(b) $\frac{3}{20}$

(c) $\frac{2}{15}$
(d) $\frac{1}{4}$

Solution

- (a) The numerator is 3. (c) The numerator is 2.
(b) The numerator is 3. (d) The numerator is 1.

Example 2.2

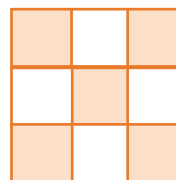


$\frac{2}{4}$ is shaded and $\frac{2}{4}$ is unshaded.

Solution

$\frac{2}{5}$ is unshaded and $\frac{3}{5}$ is shaded.

Example 2.3



$\frac{5}{9}$ is shaded and $\frac{4}{9}$ is unshaded.

Solution

$\frac{5}{9}$ is shaded and $\frac{4}{9}$ is unshaded.

Unit objectives

By the end of this unit learners should be able to:

- illustrate multiplication using the long and short methods.
- listing factors and multiples of given numbers.
- find the HCF of two numbers (where the HCF is less than 20).
- calculate LCM of two numbers (where the LCM is less than 100).

Example 8.1

- (a) Multiply 500 by 30.
(b) 500 times 30.
(c) 500 by 30.

Solution

- (a) $500 \times 30 = 15\ 000$
(b) $500 \times 30 = 15\ 000$
(c) $500 \times 30 = 15\ 000$

Example 8.2

- (a) What is the product of 600 and 20?
(b) The multiplicand is 600 and the multiplier is 20. What is the product?

Solution

- (a) $600 \times 20 = 120\ 000$
(b) $600 \times 20 = 120\ 000$

Factors

A factor is a number that can divide into another number without leaving a remainder.

Example 8.3

State the factors of :

- (a) 10.
(b) 18.

Solution

- (a) Number Factors
10: 1; 2; 5; 10
(b) Number Factors
18: 1; 2; 3; 6; 9; 18

Example 8.4

State the common factors of 50 and 100.

Solution

Number Factors
50: 1; 2; 5; 10; 25; 50
100: 1; 2; 4; 5; 10; 20; 25; 50; 100
The common factors are 1, 2, 5, 10, 25 and 50.

Example 8.5

Find the HCF of 50 and 100.

Solution

Factors of 50 = 1, 2, 5, 10, **50**
Factors of 100 = 1, 2, 5, 10, **50**
The Highest Common Factor = 50

Example 8.6

Find the HCF of 20 and 30.

Solution

Factors of 20 = 1, 2, 4, 5, **10**
Factors of 30 = 1, 2, 3, 5, 6, **10**, 15
The Highest Common Factor = 10

Example 8.13

Find the LCM of 3 and 5.

Solution

3 - 3; 6; 9; 12; **15**; 18; 21; 24; 27; **30**

5 - 5; 10; **15**; 20; 25; **30**; 35; 40

The common factors are 15 and 30.

The Lowest Common Multiple is 15.

Exercise 8.2

Find the Lowest Common Multiple.

1. 2 and 5
2. 5 and 7
3. 12 and 15
4. 15 and 20
5. 20 and 25

Times table

Example 8.14

$$5 \times 8 = \underline{\hspace{2cm}}$$

Solution

On the table below 5×8 has been shown. The answer is 40.

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Example 8.15

$$\begin{array}{r} 124 \\ \times 3 \\ \hline \end{array}$$

Solution

Step 1; multiply 4 by 3 to get 12, put down 2 and carry 1.

Step 2; multiply 2 by 3 to get 6, add 1 carried over from units.

Step 3; multiply 1 by 3 to get 3. The final answer is 372.

$$\begin{array}{r} 124 \\ \times 3 \\ \hline 372 \end{array}$$

Example 8.16

$$126 \times 2$$

Solution

$$\begin{array}{r} 126 \\ \times 2 \\ \hline 252 \end{array}$$

$$= 252$$

Example 8.17

$$84 \times 3 =$$

Solution

$$\begin{array}{r} 84 \\ \times 3 \\ \hline 252 \end{array}$$

$$84 \times 3 = 252$$

Example 8.18

$$327 \times 13 =$$

Solution

$$\begin{array}{r} 327 \\ \times 13 \\ \hline 13\ 270 \\ +\ 981 \\ \hline 4\ 251 \end{array}$$

$$327 \times 13 = 4\ 251$$

Exercise 8.3

- | | |
|---------------------|-----------------------|
| 1. $238 \times 8 =$ | 6. $914 \times 12 =$ |
| 2. $253 \times 6 =$ | 7. $298 \times 45 =$ |
| 3. $256 \times 7 =$ | 8. $243 \times 23 =$ |
| 4. $212 \times 6 =$ | 9. $635 \times 24 =$ |
| 5. $978 \times 7 =$ | 10. $403 \times 32 =$ |

Multiplying 3-digit numbers

Example 8.19

$$\begin{array}{r} 546 \\ \times 123 \\ \hline \end{array}$$

Solution

$$\begin{array}{r} 546 \\ \times 123 \\ \hline 54\ 600 \end{array}$$

$$\begin{array}{r} 546 \\ \times 123 \\ \hline 54\ 600 \\ 10\ 920 \end{array}$$

$$\begin{array}{r} 546 \\ \times 123 \\ \hline 54\ 600 \\ 10\ 920 \\ +\ 1\ 638 \\ \hline 67\ 158 \end{array}$$

Step 1: Place zeros (place holders) under units and tens and multiply by 1 hundred first to get 546. Place 546 before the zeros

←Place holders (zeros).

Step 2: Place zero (place holder) under units and multiply by 2 Tens to get 1 092. Place 1092 before the zero.

Step 3: Multiply by 3 to get 1 638. Place 1 638 below 10 920 and add. The final answer 67 158.

Example 8.20

$$\begin{array}{r} 2\ 345 \\ \times 56 \\ \hline 14\ 070 \quad (2\ 345 \times 6) \\ +\ 11\ 7250 \quad (2\ 345 \times 50) \\ \hline 13\ 1320 \quad (\text{total}) \end{array}$$

- The choice between short and long methods depends on the numbers involved.
- Short method: When multiplying by a single digit or when the multiplier has zeros (for example, 10, 100, 1000).

Long method: When multiplying by a multi-digit number.

Exercise 8.4

Show all your working.

- | | |
|-----------------------|---------------------------|
| 1. $236 \times 112 =$ | 6. $625 \times 213 =$ |
| 2. $423 \times 324 =$ | 7. $132 \times 312 =$ |
| 3. $654 \times 124 =$ | 8. $812 \times 214 =$ |
| 4. $656 \times 322 =$ | 9. $870 \times 554 =$ |
| 5. $934 \times 123 =$ | 10. $5\ 423 \times 223 =$ |

Multiplication using a calculator

Calculators make work easier. It is easy to use a calculator and getting answers.

Ensure that your calculator is well-powered and is working properly before you use it.

Example 8.21

A farmer planted 4 132 trees in his orchard. Each tree produced 523 fruits. Find the total number of fruits produced.

Solution

The total number of fruits produced is 2 161 036.

Example 8.22

Find the product of 7 243 and 172.

Solution

The product is 1 245 796.

Exercise 8.5

Solve the following problems using a calculator.

- $34 \times 19 =$
- $312 \times 34 =$
- $368 \times 123 =$
- $280 \times 102 =$
- A grade 7 class has 45 learners. Each one of them has 16 exercise books. Find the total number of the exercise books for the class.
- When 26 123 is multiplied by 12 the result is _____.
- Find the product of 3412 and 310.
- A farmer planted 114 rows of trees. Each row had 657 trees. Find the total number of planted trees.
- A truck has 22 wheels. How many wheels will 136 trucks have in total?
- John sold 3 153 newspapers on year one. How many newspapers will he sell in 212 years if he sells the same number yearly?

- The multiplier is 20 and the multiplicand is 37. Find the product.

A. 230
B. 740
C. 837
D. 890

- $386 \times 3 =$

A. 143
B. 213
C. 1 158
D. 1 534

- Mr Moyo's rectangular field has a perimeter of 800 m. He fenced it with a 5-strand barbed wire. How long was the barbed wire?

A. 800 m
B. 1 200 m
C. 4 000 m
D. 4 300 m

- Tom planted 36 rows of trees. Each row had 47 trees. How many trees did he plant altogether?

A. 1 692
B. 986
C. 432
D. 83

- Sam ordered 15 shirts at \$8 each. How much did he pay for the 15 shirts?

A. \$188.00
B. \$120.00
C. \$108.00
D. \$98.00

- Find the Highest Common Factor of 225 and 150.

A. 20
B. 50
C. 75
D. 80

Unit revision exercises

Multiple choice questions

- What is the product of 10 and 3?

A. 7
B. 13
C. 26
D. 30

- Multiply 16 by 12.

A. 192
B. 122
C. 28
D. 4

9. The LCM of 9 and 12 is _____.

- A. 110
- B. 108
- C. 60
- D. 36

10. When the product of 20 and 6 is multiplied by 5, the result is _____.

- A. 600
- B. 500
- C. 400
- D. 300

11. $4 + 4 + 4 + 4 + 4 = 4 \times$ _____.

- A. 20
- B. 16
- C. 15
- D. 5

12. A shirt costs \$27. A shop sells 46 of such shirts. How much money was collected from the sales?

- A. \$12.52
- B. \$73.00
- C. \$1 242
- D. \$1 252

13. $398 \times 42 =$

- A. 17 716
- B. 16 761
- C. 16 716
- D. 1 516

14. If one hour is equal to 60 minutes then 8 hours is equal to _____ minutes.

- A. 522
- B. 490
- C. 488
- D. 480

15. The multiplicand is 67 and the multiplier is 86. The product is _____.

- A. 5 762
- B. 4 762
- C. 3 132
- D. 1 211

16. Given that $1 \text{ kg} = 1\,000 \text{ g}$ then find the number of grams in 67 kg.

- A. 77 000 g
- B. 67 000 g
- C. 6 700 g
- D. 5 700 g

17. One side of a square garden is 167 m. Find the perimeter of the garden.

- A. 167 m
- B. 234 m
- C. 320 m
- D. 668 m

18. All the following sets of numbers are factors of 100 **except** _____.

- A. 1 2 3 10 20 50
- B. 1 4 10 20 50 100
- C. 2 4 5 10 20 25
- D. 1 2 4 5 10 25 50

19. Children at a boarding school ate 3 dozens of bread daily for 14 days. How many loaves of bread did they eat?

- A. 17
- B. 42
- C. 324
- D. 504

20. A bus has a carrying capacity of 75 passengers. It carries full loads of passengers 6 times. How many passengers were carried in total?

- A. 534
- B. 450
- C. 89
- D. 81

Structured questions

Answer **all** the questions. Omission of essential working may result in loss of marks.

1. (a) The product of 13 and 12 is _____.
(b) Multiply 15 by 6.
(c) $416 \times 13 =$

MATHEMATICS 7020/01

PAPER 1

TIME: 2 HOURS

END OF TOPIC 3 EXAMINATION

INSTRUCTIONS TO CANDIDATES

- Answer **all** the questions on the separate answer sheet provided.
- Use only an HB pencil for all entries on the answer sheet.

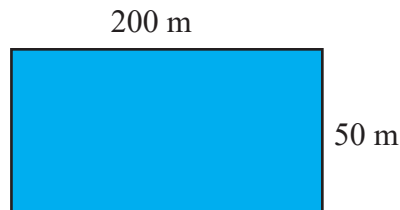
1. A flight from Harare to London takes 11 hours and 45 minutes. If the plane lands at 06:15 on Tuesday, what time did it depart on Monday?

A. 18:30 B. 19:30 C. 20:30 D. 17:30

2. How many grams are in $3\frac{3}{8}$ kilograms?

A. 3 375 g B. 3 380 g C. 3 125 g D. 3 750 g

3. Find the perimeter of the rectangular field below.



A. 1 000 m B. 800 m C. 400 m D. 500 m

4. How many cents are in 5 dollars?

A. 5c B. 50c C. 500c D. 5000c

5. A car travels at an average speed of 84 km/h. How far will it travel in 1 hour and 45 minutes?

A. 147 km B. 126 km C. 154 km D. 168 km

6. A tank has a capacity of 4,5 cubic metres. How many 20-litre buckets are needed to fill the tank?

A. 22,5 B. 225 C. 2 250 D. 450

7. The sum of the interior angles of a triangle is 180° . If two angles are 35° and 75° , the third angle is _____.

A. a right angle B. an obtuse angle C. an acute angle D. a reflex angle

8. A farmer planted 798 trees per row. 78 rows were planted. How many trees were planted?

A. 876 B. 9 278 C. 62 244 D. 65 000

9. A cyclist covers 150 km in 6 hours. At the same rate, how long will it take to cover 225 km?

A. 8 hours B. 9 hours C. 10 hours D. 7 hours 30 mins

33. The picture shows a clock.

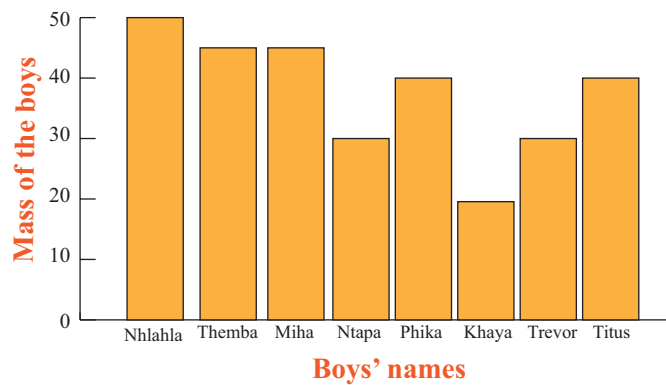


What time is shown on the clock?

- A. 08:45 B. 09:45 C. 08:44 D. 09:44
34. The area of a square is $0,64 \text{ m}^2$. Find its perimeter in centimetres.
- A. 320 cm B. 80 cm C. 240 cm D. 32 cm
35. A teacher is paid \$18 per hour. If she works from 07:45 to 16:15 with a 45-minute lunch break, how much does she earn in one day?

- A. \$144 B. \$139,50 C. \$153 D. \$135

Use the diagram below to answer questions 36-40.



36. Which two boys have a combined mass that is exactly equal to the mass of the heaviest boy?
- A. Phika and Khaya B. Miha and Phambuka
C. Themba and Phambuka D. Ntapa and Khaya
37. How many boys in the group have a mass that is greater than 25 kg but less than 45 kg?
- A. 4 B. 5 C. 6 D. 7
38. If Trevor and Khaya were to stand on a scale together, their total mass would be the same as the mass of:
- A. Nhlahla B. Titus C. Khumalo D. Miha
39. Calculate the average (mean) mass of the three lightest boys.
- A. 10 kg B. 12 kg C. 16 kg D. 45 kg
40. If Ntapa gains 5 kg and Titus loses 5 kg, which statement becomes true?
- A. Ntapa is now heavier than Titus.
B. Themba and Ntapa now have the same mass.
C. Titus and Ntapa now have the same mass.
D. Ntapa is now the lightest boy.

**END OF TOPIC 3
EXAMINATION**

MATHEMATICS 7020/02

PAPER 2

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- Answer **all** questions in Section **A** and any **three** questions in Section **B**.
- Write your answers on the spaces provided below each question.

Section A (25 marks)

Answer **all** questions in this section.

- (a) Write 750 g in kilogrammes. [1]

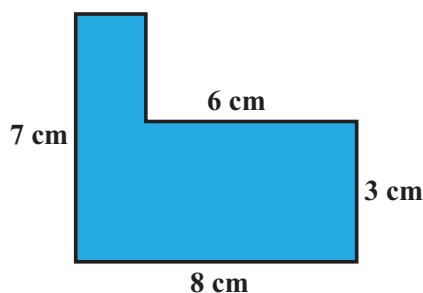
(b) (ii) If the perimeter of a regular octagon is 64 cm, find the length of one side. [2]

(ii) Find the angle between South and East. [1]
- (a) A train left Bulawayo at 22:45 and arrived in Harare at 06:15 the next day. How long did the journey take? [2]

(b) Find: $\frac{1}{2}$ of a kilometre. [1]
- (a) Find the cost of 3 loaves of bread and 2 pints of milk if a loaf costs \$1 and a pint of milk costs 50c. [2]

(b) (i) Calculate the change from \$10.00. [1]

(ii) How many cents make up \$22? [1]
- Convert 7 250 g into kilogrammes and grammes. [1]
- (a) Below is a diagram of a composite L-shape. Calculate the total area of the shape. [2]



- (b) Find the volume of a rectangular tank with length 2 m, width 1,5 m and height 1 m. [2]
- (a) Convert 12,5 kilometres into metres. [1]

(b) A train leaves at 21:30 and arrives at 04:15 the next day. How long was the journey? [2]
- (a) The diameter of a circle is 12 cm. Find its radius. [1]

(b) Calculate the perimeter of a regular six-sided shape with a side of 6 cm. [2]

School Based Project 3

Project title: Planning for area and perimeter

1. Investigation of related ideas to the problem / innovation (5 marks)

1.1 Description of the problem (1 mark)

Some learners can calculate the area of a rectangle on paper but struggle to estimate or measure real physical spaces. When planning for a school garden or a fenced sports area, learners often fail to understand how the **Perimeter** dictates the cost of fencing and how the **Area** determines the number of plants or the amount of fertilizer needed. This project bridges the gap between theoretical geometry and physical land use.

1.2 Existing ideas and practices (2 marks)

- Calculating perimeter and area of shapes drawn in exercise books.
- Memorising formulas ($L \times W$) without knowing what “Length” and “Width” represent in a field.
- Teachers showing small rulers and meter sticks in a classroom setting only.

1.3 Merits and demerits of existing ideas (2 marks)

- **Merits:** Provides the mathematical formulaic foundation required for examinations.
- **Demerits:** Learners lack the “spatial sense” to know if a garden is roughly 10 square metres or 100 square metres. It leads to inaccurate “real-life” estimations.

2. Generation of possible solutions (10 marks)

2.1 Possible solutions with analysis (10 marks)

- **The tiling solution:** Measuring the classroom floor and calculating the number of tiles needed (Area).
- **The garden design solution (Selected):** Learners will design a multi-shape school garden. They must calculate the total fencing required (Perimeter of composite shapes) and the planting space available (Area of squares, rectangles, and triangles).
- **Model building:** Creating a 3D cardboard model of the garden using a specific scale.

3. Implementation of the selected solution (10 marks)

3.1 Field measurement (2 marks)

- Learners use a trundle wheel or long measuring tape to measure a designated piece of land at the school.
- *Task:* Measure the length of all sides of an irregular or composite shape (for example, a rectangular plot with a triangular corner).

3.2 Calculating perimeter (2 marks)

- Learners calculate the total distance around the plot to determine the amount of fencing wire needed.
- *Task:* Sum all measured sides. If the garden has 6 sides, find the total length in metres.

3.3 Calculating area (3 marks)

- Learners divide their garden plot into “basic shapes” (squares, rectangles, or right-angled triangles) to find the total area.
- *Task:* Apply the formulas: $\text{Area} = L \times W$ for rectangles and $\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$ for triangles.

3.4 Costing and financial transaction (3 marks)

- Learners apply the “Money” objective by calculating costs.
- *Task:* If fencing wire costs \$2.50 per meter, calculate the total cost for the perimeter found in 3.2. If a bag of fertilizer covers 10m^2 , how many bags are needed for the total area found in 3.3?

4. Refinement of selected solution (10 marks)

4.1 Refinements (10 marks)

- Re-measure the “diagonal” sides of triangular sections to ensure the perimeter is exact.
- Convert smaller measurements (cm) into standard meters (m) to ensure uniform units before multiplying for area.
- Check if the total area was calculated in square meters (m^2) rather than just metres (m).

5. Presentation of the final solution (10 marks)

5.1 Evidence of the final solution (10 marks)

- **The garden blueprint:** A neatly drawn map of the garden on graph paper showing the measurements of each side.
- **The calculation sheet:** Showing the step-by-step math for both Perimeter and Area.
- **The budget quote:** A simple table showing the cost of fencing and fertilizer based on the measurements.

6. Evaluation of the solution and recommendations (5 marks)

6.1 Evaluation (3 marks)

- Learners successfully applied “Measures” to a physical space, showing an understanding of the difference between linear distance (fencing) and surface space (planting).
- The use of real money values helped learners appreciate the importance of accuracy—errors in measurement lead to wasted money.

6.2 Recommendations (2 marks)

- Math projects should be integrated with Agriculture (Garden units) for better relevance.
- Schools should provide trundle wheels so learners can measure larger distances like the school boundary or a soccer pitch.

Total marks: 50

Unit 22

Topic 4: Relationships Data handling

Unit objectives

By the end of this unit, learners should be able to:

- collect statistical data.
- read and interpret data from ready reckoners such as:
 - tables,
 - bar graphs,
 - column graphs,
 - pie charts,
 - pictographs,
 - jagged line graphs.
- use statistical graphs in life situations.

Interpreting data from tables

Example 22.1

The table shows the total number of grade 7 learners at various schools in Tsholotsho district.

	Girls	Boys	Total
Dikili	39	45	84
Tshabanda	90	64	154
Chefunye	49	38	87
Thetshane	34	57	91
Mathe	56	41	97
Mbalibali	35	48	83
Bhubhude	75	70	145
Soluswe	41	32	73
Siyangaya	24	34	58
Dinyane	80	76	156
Total	523	505	1 028

- (a) How many boys are at Dikili School?
- (b) Find the number of girls at Dinyane Primary School.

- (c) Find the total number of girls for all the schools.

Solutions

- (a) There are 45 boys at Dikili Primary School.
- (b) There are 80 girls at Dinyane School.
- (c) There is a total of 523 girls for all the schools.

Exercise 22.1

The table shows the time table of a bus that operates the Bulawayo Tsholotsho route.

Day	Departed Bulawayo	Arrival in Tsholotsho
Sunday	1600	1900
Monday	1200	1500
Tuesday	1200	1500
Wednesday	1200	1500
Thursday	1200	1500
Friday	1700	2000
Saturday	1200	1500

1. State the time at which the bus will leave Bulawayo on these days :
 - (a) Wednesday.
 - (b) Friday.
 - (c) Saturday.
2. On which day will the bus arrive in Tsholotsho at 2000?
3. How long does it take the bus to travel from Bulawayo to Tsholotsho on Fridays?
4. Given that the distance from Bulawayo to Tsholotsho is 240 km then calculate the average speed of the bus on Sunday.
5. On how many days does the bus arrive in Tsholotsho at 1500?

MATHEMATICS 7020/01

PAPER 1

TIME: 2 HOURS

END OF TOPIC 4 EXAMINATION

INSTRUCTIONS TO CANDIDATES

- Answer **all** the questions on the separate answer sheet provided.
- Use only an HB pencil for all entries on the answer sheet.

The data table below shows how many domestic animals are kept in four different villages. Use the table to answer questions 1 to 4.

Village	Cattle	Goats	Sheep	Donkeys
Kushinga	120	250	80	15
Tashinga	95	310	45	10
Ruvimbo	200	180	120	30
Mufaro	150	220	60	5

- Which village has the highest number of cattle?
A. Kushinga **B.** Tashinga **C.** Ruvimbo **D.** Mufaro
- What is the total number of donkeys kept in all four villages?
A. 50 **B.** 60 **C.** 70 **D.** 80
- How many more goats are in Tashinga than in Ruvimbo?
A. 110 **B.** 120 **C.** 130 **D.** 140
- Which animal is the least common across all four villages?
A. Cattle **B.** Goats **C.** Sheep **D.** Donkeys

The pictograph below shows the number of bags of maize delivered to a Grain Marketing Board (GMB) by four farmers. Use the pictograph to answer questions 5 to 8.

Key:  = 50 bags

Farmer	Bags delivered
Mr Moyo	    
Mrs Sibanda	  
Mr Phiri	      
Mrs Zhou	   

END OF TOPIC 4 EXAMINATION

MATHEMATICS 7020/02

PAPER 2

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- Answer **all** questions in Section **A** and any **three** questions in Section **B**.
- Write your answers on the spaces provided below each question.

Section A (25 marks)

Answer **all** questions in this section.

1. The following tally marks represent the number of bags of maize harvested by a farmer.

|||| |||| |||| ||

- (a) Write the number represented by the tally marks. [1]
 (b) If each bag weighs 50kg, find the total mass harvested. [2]

2. A table shows the number of learners in four Grade 7 classes.

Class	7A	7B	7C	7D
Learners	42	38	45	35

- (a) Which class has the highest number of learners? [1]
 (b) Calculate the total number of learners in Grade 7. [2]

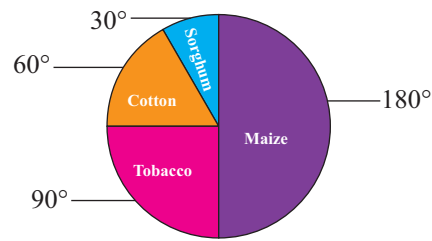
3. The pictograph below shows trees planted in a community woodlot.

Key:  = 20 trees

Species	Number of symbols
Gum tree	   
Mango	 

- (a) How many gum trees were planted? [1]
 (b) Find the difference between the number of gum trees and mango trees. [2]
4. A column graph represents the favourite sports of 60 learners. The column for “Football” is twice as high as the column for “Netball.” If 10 learners chose netball:
- (a) How many learners chose football? [1]
 (b) What percentage of the 60 learners chose football? [2]

10. The pie chart below shows the distribution of 360 hectares of land at a farm:



- (a) Find the area, in hectares, planted with maize. [2]
 (b) Which crop occupies $\frac{1}{6}$ of the farm? [1]
 (c) Find the total area planted with tobacco and cotton. [2]
11. The table below shows the weekly earnings of a vegetable vendor:

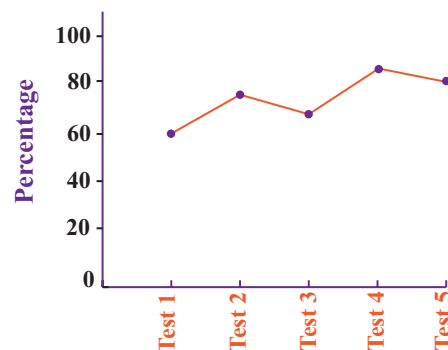
Day	Mon	Tue	Wed	Thu	Fri
Earnings (\$)	15	22	18	25	20

- (a) Calculate the total earnings for the week. [2]
 (b) Find the difference between the highest and lowest daily earnings. [2]
 (c) State the day the vendor earned exactly \$25. [1]
12. The pictograph below represents the number of cattle owned by four farmers.

Key:  = 12 cattle

Farmer A	  
Farmer B	 
Farmer C	   

- (a) How many cattle does Farmer C have? [1]
 (b) How many more cattle does Farmer A have than Farmer B? [2]
 (c) If Farmer D has 18 cattle, how many symbols should represent his cattle? [2]
13. A jagged line graph tracks a learner's marks in five Mathematics tests:



- (a) Between which two tests was the greatest increase in marks? [2]
 (b) What is the range between the highest and lowest mark? [2]
 (c) Did the learner's performance improve or decline between Test 4 and Test 5? [1]

School Based Project 4

Project title: Investigating the school health and nutrition survey

1. Investigation of related ideas to the problem / innovation (5 marks)

1.1 Description of the problem (1 marks)

Some learners often struggle to interpret “cold” data found in textbooks. While they can draw a bar graph, they often don’t understand how data can be used to make decisions, such as identifying trends in school nutrition or health. This project addresses the gap between collecting raw information (tallying) and visual representation (graphs) to tell a story about their own school community.

1.2 Existing ideas and practices (2 marks)

- Drawing graphs based on fictional data provided in a textbook.
- Learning about different graph types (Pie chart, Bar graph, Line graph) in isolation.
- Simple counting exercises in the classroom that lack a broader purpose.

1.3 Merits and demerits of existing ideas (2 marks)

- **Merits:** Ensures learners understand the technical rules of drawing axes and scales.
- **Demerits:** Fails to teach learners how to design a survey, handle real-world “messy” data or choose the correct graph for the data they have collected.

2. Generation of possible solutions (10 marks)

2.1 Possible solutions with analysis (10 marks)

- **The traffic survey:** Tallying the types of vehicles passing the school and creating a bar graph.
- **The nutrition tracker (Selected):** Learners will conduct a survey on the favourite healthy snacks or daily water intake of their peers. They will process this data using tally systems, frequency tables and pie charts.
- **Weather station:** Recording daily temperatures to create a jagged line graph.

ZIMBABWE GRADE SEVEN EXAMINATIONS

MATHEMATICS
PAPER 1

7020/1

SPECIMEN PAPER

Time: 2 Hours

INSTRUCTIONS TO CANDIDATES

1. Read all the instructions carefully.
2. **Do not** open this booklet until you are told to do so by the invigilator.
3. Use only an HB pencil for all entries on the answer sheet.
4. If you wish to change your answer, **erase** it **completely** with a pencil rubber and then shade the new choice.
5. Answer **all** the questions on the separate answer sheet provided.

SPECIMEN PAPER

EXAMINATION PRACTICE

1

MATHEMATICS 7020/01

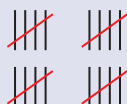
PAPER 1

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- Answer **all** the questions on the separate answer sheet provided.
- Use only an HB pencil for all entries on the answer sheet.

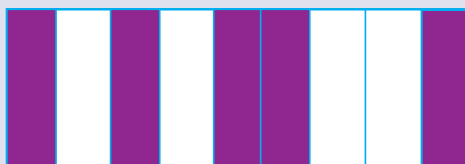
- Express “four million fifty thousand and six” in numerals.
A. 4 050 060 **B.** 4 500 006 **C.** 4 050 006 **D.** 4 005 006
- What is the place value of the digit 7 in 9 743 021?
A. Thousands **B.** Ten thousands
C. Hundred thousands **D.** Millions
- Which number comes next in the sequence: 1, 4, 9, 16, _____?
A. 20 **B.** 24 **C.** 25 **D.** 30
- Estimate the sum of 4 982 and 3 015 by rounding to the nearest thousand.
A. 7 000 **B.** 8 000 **C.** 7 900 **D.** 8 100
- Study the tally chart showing types of vehicles in a parking lot.

Cars = 

Trucks = 

How many more cars are there than trucks?

- A.** 2 **B.** 5 **C.** 10 **D.** 20
- Convert the Arabic numeral 44 to Roman Numerals.
A. XLIV **B.** LXIV **C.** XLVI **D.** XXXIV
- The rectangle below is divided into 9 equal parts. What fraction of the rectangle is shaded?



- A.** $\frac{2}{9}$ **B.** $\frac{3}{9}$ **C.** $\frac{4}{9}$ **D.** $\frac{5}{9}$

8. What is 0,045 as a fraction in its simplest form?

A. $\frac{45}{100}$ B. $\frac{9}{20}$ C. $\frac{9}{200}$ D. $\frac{45}{1000}$

9. Round off 12,748 to two decimal places.

A. 12,74 B. 12,75 C. 12,70 D. 12,80

10. Look at the price list for a stationery shop.

A pen costs	\$0.50
A ruler costs	\$1

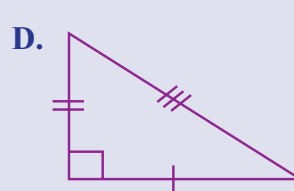
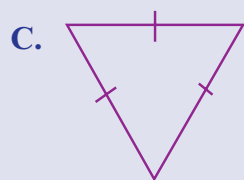
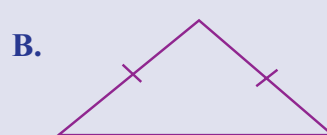
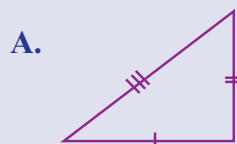
What is the total cost of 4 pens and 2 rulers?

A. \$3.20 B. \$3.60 C. \$4.00 D. \$2.60

11. Find the Highest Common Factor (HCF) of 15 and 45.

A. 3 B. 5 C. 15 D. 45

12. Which of the following triangles is an equilateral?



13. Calculate $1\frac{3}{4} \times \frac{2}{7}$.

A. $\frac{1}{2}$ B. $1\frac{1}{2}$ C. $\frac{1}{4}$ D. $5\frac{1}{4}$

14. $\frac{7}{10} + \frac{1}{5} + \frac{1}{2} =$

A. $\frac{9}{10}$ B. $1\frac{2}{5}$ C. $1\frac{1}{10}$ D. $1\frac{1}{5}$

15. Study the pictograph below. Key: 1 ★ = 10 points.

Team	Score
A	★ ★ ★
B	★ ★ ★ ★ ★

What is the difference in points between team A and B?

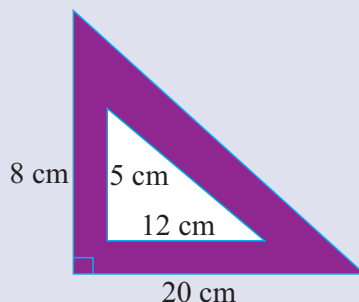
A. 5 B. 10 C. 15 D. 20

16. How many days are in 12 weeks?
A. 72 **B.** 80 **C.** 84 **D.** 96
17. A worker starts work at 08:30 and finishes at 16:45. How long did he or she work?
A. 7 hours 15 mins **B.** 8 hours 15 mins
C. 8 hours 45 mins **D.** 7 hours 45 mins
18. Convert 3,5 tonnes into kilogrammes.
A. 350 kg **B.** 3 500 kg **C.** 35 000 kg **D.** 35 kg
19. A rectangular field has a perimeter of 300 m. If the length is 100 m, what is the width?
A. 50 m **B.** 100 m **C.** 200 m **D.** 150 m
20. Look at the marked angle on the diagram.



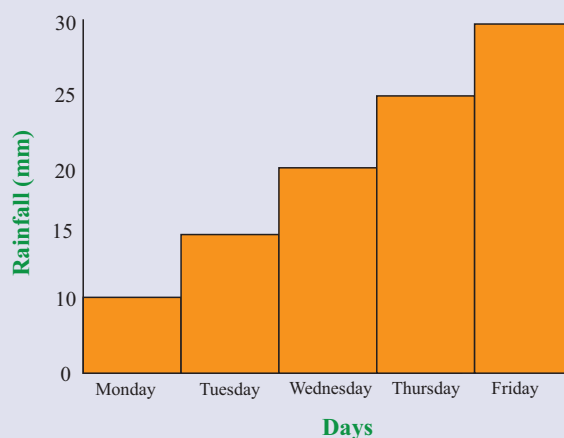
Which of the following could be the measurement of this angle?

- A.** 45° **B.** 110° **C.** 180° **D.** 290°
21. A car travels at 60 km/h. How far does it go in 15 minutes?
A. 4 km **B.** 15 km **C.** 20 km **D.** 30 km
22. The area of the shaded part in the diagram is _____.



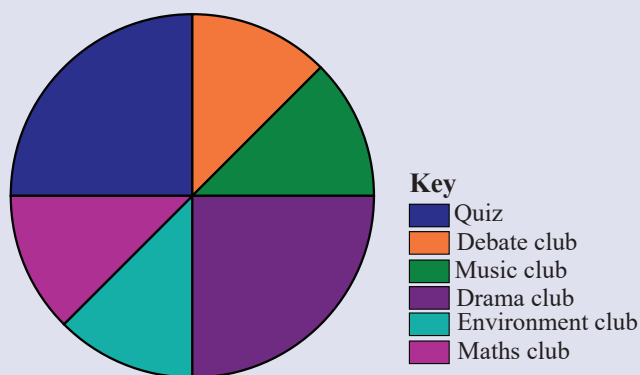
- A.** 80 cm^2 **B.** 30 cm^2 **C.** 50 cm^2 **D.** 110 cm^2
23. A cylindrical tin has a diameter of 10 cm. What is its radius?
A. 20 cm **B.** 5 cm **C.** 31,4 cm **D.** 10 cm
24. How many vertices does a triangular prism have?
A. 3 **B.** 5 **C.** 6 **D.** 9

25. Study the bar graph below showing rainfall for five days.



What is the average rainfall for these five days?

- A. 8 mm
B. 9 mm
C. 10 mm
D. 20 mm
26. Which direction is exactly halfway between North and East?
A. North-West B. South-East C. North-East D. North-North-East
27. A clock shows 3:00. What is the size of the smaller angle between the hands?
A. 45° B. 90° C. 180° D. 270°
28. $\frac{5}{6}$ of 72 =
A. 60 B. $\frac{1}{2}$ C. 66 D. 50
29. Solve: $0,8 \times 0,04 =$
A. 0,32 B. 0,032 C. 3,2 D. 0,0032
30. Study the pie chart showing school club membership.



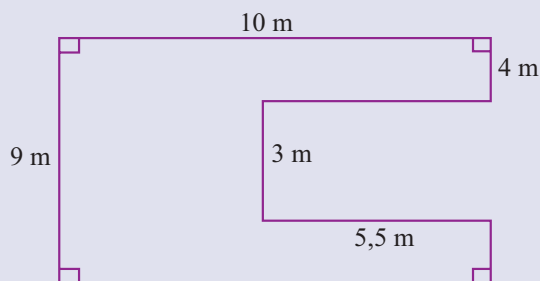
If there are 200 learners in clubs, how many are in the Drama club?

- A. 30 B. 50 C. 75 D. 120

31. $12 - (3 \times 2) + 10 =$

- A. 28 B. 16 C. 22 D. 4

32. The perimeter of the shape shown below is _____.



- A. 90 m B. 37 m
C. 51 m D. 49 m

33. How many millilitres are in $2\frac{1}{4}$ litres?

- A. 2 250 ml B. 2 500 ml C. 225 ml D. 20 250 ml

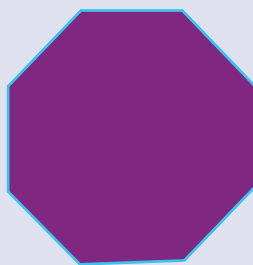
34. If a shirt which costs \$20 is increased by 10%, what is the new price?

- A. \$21 B. \$22 C. \$30 D. \$18

35. A vendor bought goods for \$10. He sold them for \$18. How much was the profit?

- A. \$80
B. \$40
C. \$18
D. \$8

36. The shape below is _____.



- A. a hexagon B. a decagon C. an octagon D. a heptagon

37. $2,5 \div 0,05 =$

- A. 5 B. 50 C. 500 D. 0,5

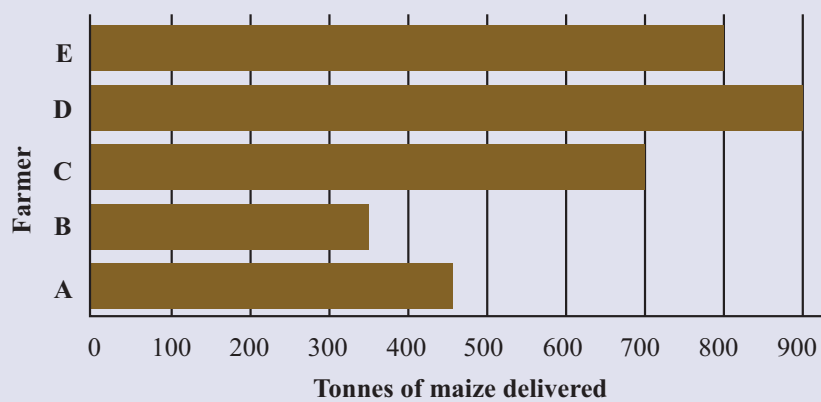
38. The distance around a circle is the _____.

- A. radius B. diameter C. circumference D. area

39. Find 12,5% of \$80.

- A. \$10 B. \$12 C. \$8 D. \$15

40. The bar graph below shows how much maize 5 farmers delivered to the GMB.



Which farmer delivered 450 tonnes to the GMB?

- A. Farmer A
- B. Farmer B
- C. Farmer C
- D. Farmer D

ZIMBABWE GRADE SEVEN EXAMINATIONS

MATHEMATICS PAPER 2

7020/02

SPECIMEN PAPER

Time: 2 Hours

INSTRUCTIONS TO CANDIDATES

1. Write your name, centre number and candidate number in the spaces at the top of this page.
2. Answer **all** questions in Section A and any three questions in Section B.
3. Write your answers on the spaces provided below each question.
4. Necessary working must be clearly shown in the blank spaces below each question.
5. Do **not** measure from given diagrams.
6. Electronic calculators and slide rules must not be used in the examination.

FOR EXAMINER'S USE

Section A	
1	
2	
3	
4	
5	
6	
7	
8	
Section B	
TOTAL	

SPECIMEN PAPER

EXAMINATION PRACTICE

1

MATHEMATICS 7020/02

PAPER 2

TIME: 2 HOURS

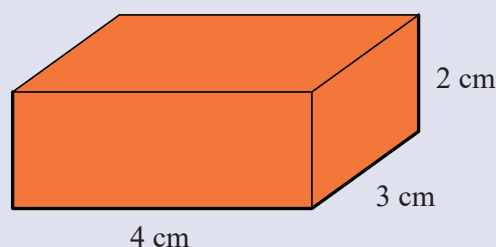
INSTRUCTIONS TO CANDIDATES

- Answer **all** questions in **Section A** and any **three** questions in **Section B**.
- Write your answers on the spaces provided below each question.

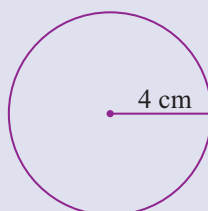
Section A (25 marks)

Answer **all** questions in this section.

- (a) Write 9 800 075 in words. [1]
 - (b) Round off 9 800 075 to the nearest hundred thousand. [1]
- (a) Find the Lowest Common Multiple (LCM) of 8, 12 and 16. [2]
 - (b) Is the number 27 a prime number? Give a reason. [1]
- (a) Calculate $4,56 \times 1,2$. [2]
 - (b) Simplify $512 - 234$. [2]
- Below is a diagram of a rectangular prism (cuboid).



- (a) Calculate the volume of the cuboid. [2]
 - (b) If the cuboid is filled with water, how many millilitres will it hold? [2]
- (a) A bus travels 240 km in 3 hours 20 minutes. Calculate its speed in km/h. [2]
 - (b) If the bus leaves at 23:15, at what time does it arrive? [1]
- (a) Calculate the diameter of the circle. [2]



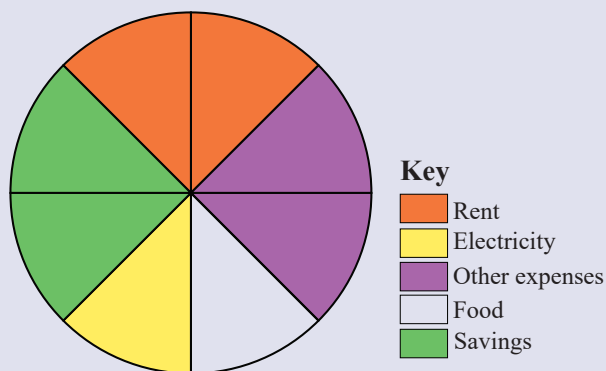
- (b) (i) Name any two plane shapes. [1]
 - (ii) State the number of faces in a rectangular prism. [1]

7. (a) A girl spends \$12.50 out of \$50.00. What percentage of her money did she spend? [2]
 (b) Convert 0,875 to a fraction in its lowest terms. [1]
8. A cyclist recorded distances travelled over 3 days. If the cyclist travelled 10 km, 15 km and 20 km, calculate the average distance travelled per day. [2]

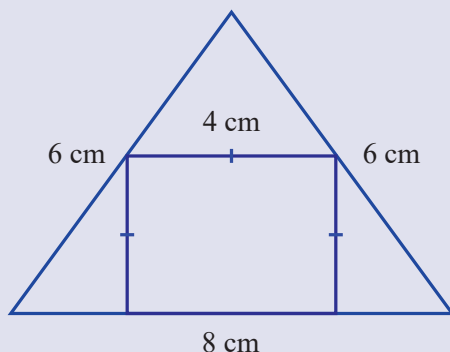
Section B (15 marks)

Answer any **three** questions in this section.

9. (a) $\frac{1}{2} \times \frac{3}{4}$ [2]
 (b) Add $\frac{2}{3} + \frac{1}{4} + 5\frac{1}{2}$. [2]
 (c) Write $\frac{22}{7}$ as a mixed fraction. [1]
10. The pie chart below shows how a family distributes its total monthly income of \$1 500 across various household expenses.



- (a) Calculate the amount of money allocated for Food. [2]
 (b) How much more money is spent on Rent than on Electricity? [2]
 (c) Find the simple interest on \$2 500 at 4% per annum for 6 months. [1]
11. (a) Calculate the area of the square part. [1]



- (b) Calculate the area of the rectangle. [2]
 (c) What is the total area of the bigger composite shape given that the height of the triangle is 5 cm? [2]

Unit 1

Exercise 1.1

1. (a) Five hundred and forty-two
(b) Sixteen thousand two hundred and eighty-three
(c) One hundred and fifty-two thousand seven hundred and fifty-eight

- (d) Seven hundred and sixty-nine thousand three hundred and twelve
(e) Five million one hundred and thirty-two thousand four hundred and twelve
(f) Nine

2. (g) Twenty-five
(h) Forty-five
(a) 176
(b) 657 907
(c) 1 000 634

Exercise 1.2

1. 900

2. 20

3. 4

4. 30

5. 20

6. 1 000 000

7. 7

8. 40 000

9. 300 000

10. 60 000 000

Exercise 1.3

1. $10\ 000 + 2\ 000 + 500 + 4$

2. $(6 \times 1\ 000) + (7 \times 100) + (8 \times 10) + (2 \times 1)$

3. $\frac{4}{5} + \frac{10}{100}$

4. $(2 \times 10^6) + (3 \times 10^5) + (1 \times 10^4) + (2 \times 10^3)$

5. 0,03

6. $1\ 000 + 200 + 50 + 0,5$

7. $(9 \times 1\ 000) + (0 \times 100) + (0 \times 10) + (1 \times 1)$

8. 702,905

9. $10 + 5 + 0,1 + 0,02 + 0,005$

10. $800 + 5 + 0,06$

Exercise 1.4

1. 45, 47, 49, 51, 53, 55
2. 124, 126, 128, 130, 132, 134
3. 31, 37, 41, 43, 47

Exercise 1.5

1. 320
2. 490
3. 200
4. 3 200
5. 9 000
6. 50 000
7. 200 000
8. 9 000 000
9. 9 000 000
10. 4 000

Exercise 1.6

1. <
2. <
3. <
4. <
5. >
6. >

Exercise 1.7

1. (a) 100th
(b) 62nd
(c) 81st

2. (a) Eleventh
(b) Forty-fifth
(c) Twentieth
3. 8
4. 19th
5. third
6. first
7. (a) 2nd
(b) 3rd
(c) 1st

Examination Practice 1 Examination Practice 2

Section A

1. (a) Seven million four hundred and three

thousand and fifteen.

(b) Hundred thousand

2. (a) Trapezium

(b) 2 dimensions

(c) 21 cm

3. (a) \$6.90

(b) \$3.10

4. (a) Radius

(b) 53°

(c) 20 cm²

5. (a) Rectangle or parallelogram

(b) Line AD

(c) 16 cm

6. (a) 3 000 kg

(b) 20 metres per second

7. (a) 5

(b) \$40

8. (a) <

(b) >

Section A

1. (a) Nine million eight hundred thousand and

seventy-five.

(b) 9 800 000

2. (a) 48

(b) No. It has more than two factors

(1, 3, 9, 27).

3. (a) 5,472

(b) 278

4. (a) 24 cm³

(b) 24 ml

5. (a) 72 km/h

(b) 02:35

6. (a) 8 cm

(b) (i) Triangle, square

(ii) 6 faces

7. (a) 25%

(b) $\frac{8}{7}$

8. If the cyclist travelled 10 km, 15 km and 20 km:

Total: 10 + 15 + 20 = 45 km

Average: 45 divided 3 = 15 km per day

Section B

9. (a) $\frac{8}{3}$

(b) $6\frac{1}{5}$

(c) $3\frac{1}{7}$

10. (a) \$187.50

(b) \$187.50

(c) \$50

11. (a) 16 cm²

(b) 16 cm²

(c) 20 cm³

12. (a) 25 litres

(b) 192 km

13. (a) Rectangular prism

(b) 8 vertices

(c) 6 faces

(d) 70 cm³

Section B

9. (a) 24 cm²

(b) 72 cm²

10. (a) Anesu

(b) 1 kg

11. (a) 22 years

(b) 18 years

12. (a) \$100 (assuming Chido has $\frac{1}{12}$ of the pie

chart).

(b) \$300

13. (a) 9 hours 30 minutes

(b) 46,32 km/h

(c) 07:00