



Tutorial Letter 101/3/2018

MATHEMATICS AND MATHEMATICS TEACHING

PST201F

Semesters 1 and 2

Department of Mathematics Education

This tutorial letter contains important information
about your module.

BARCODE

CONTENTS

Page

1	INTRODUCTION	4
2	PURPOSE AND OUTCOMES	5
2.1	Purpose	5
2.2	Outcomes	6
3	LECTURER(S) AND CONTACT DETAILS.....	7
3.1	Lecturer	7
3.2	Department	8
3.3	University	8
4	RESOURCES	9
4.1	Prescribed books	9
4.2	Recommended books	10
4.3	Electronic reserves (e-reserves)	10
4.4	Library services and resources information	10
5	STUDENT SUPPORT SERVICES.....	13
5.1	Study groups.....	13
5.2	myUnisa.....	14
5.3	Tutorials.....	14
5.4	Videoconferencing	14
5.5	Tutors	15
6	STUDY PLAN.....	15
7	PRACTICAL WORK AND WORK-INTEGRATED LEARNING.....	15
8	ASSESSMENT	15
8.1	Assessment criteria.....	15
8.2	Assessment plan.....	15
8.3	Assignment numbers	17
8.3.1	General assignment numbers	17
8.3.2	Unique assignment numbers.....	17
8.4	Assignment due dates.....	18
8.5	Submission of assignments	18
8.6	The assignments.....	19
8.7	Other assessment methods	19
8.8	The examination	20
8.8.1	Examination admission	20
8.8.2	How will this work in practice?.....	20

8.8.3	Examination period	20
8.8.4	Previous examination papers	21
9	FREQUENTLY ASKED QUESTIONS	21
10	SOURCES CONSULTED	21
11	IN CLOSING	22
12	ADDENDUM	22
	ADDENDUM A: Semester 1 assignments.....	23
	<i>Assignment 01</i>	23
	<i>Assignment 02</i>	27
	ADDENDUM B: Semester 2 assignments.....	36
	<i>Assignment 01</i>	36
	<i>Assignment 02</i>	39

1 INTRODUCTION

Dear Student

It is a pleasure to welcome you as a student to PST 201F module and hope that you will find it both interesting and rewarding. I will do my best to make your study of this module successful. You will be well on your way to success if you start studying early in the semester and resolve to do the assignment(s) properly.

You will receive a number of tutorial letters during the semester. A tutorial letter is our way of communicating with you about teaching, learning and assessment.

This tutorial letter contains important information about the scheme of work, resources and assignments for this module. We urge you to read it carefully and to keep it at hand when working through the study material, preparing the assignment(s), preparing for the examination and addressing questions to your lecturers.

In this tutorial letter (101), you will find the assignments and assessment criteria as well as instructions on the preparation and submission of the assignments. It also provides all the information you need with regard to the prescribed study material and other resources and how to obtain them. Please study this information carefully and make sure that you obtain the prescribed material as soon as possible.

We have also included certain general and administrative information about this module. Please study this section of the tutorial letter carefully.

Right from the start we would like to point out that you **must read all the tutorial letters** you receive during the semester **immediately and carefully**, as they always contain important and, sometimes, urgent information.

We hope that you will enjoy this module and wish you all the best!

Tutorial matter

Some of this tutorial matter may not be available when you register. Tutorial matter that is not available when you register will be posted to you as soon as possible, but is also available on *myUnisa*.

Please note: your lecturer cannot help you with missing study material.

Email: despatch@unisa.ac.za

The department of Despatch should supply you with the following study material for this module:

- Tutorial letter 501 (This is the study guide for PST201F)
- Tutorial letters 101 at registration and others later

Apart from tutorial letter 101, you will also receive other tutorial letters during the semester. These tutorial letters will not necessarily be available at the time of registration, but will be dispatched to you as soon as they are available or needed (for instance, for feedback on assignments).

If you have access to the internet, you can view the tutorial letters for the modules for which you are registered on the university's online campus, myUnisa, at <http://my.unisa.ac.za>.

2 PURPOSE AND OUTCOMES

2.1 Purpose

The purpose of the module, Mathematics and Mathematics teaching, is to gain insight into the theoretical framework and methodology: problem solving and problem-centred approach: strategic teaching and learning, culture and world view (knowledge systems for number and space); number and spatial skills; mathematics conceptualisation of the young learner; assessment.

2.2 Outcomes

Learning Outcomes for the module

Learning Outcome 1:

Students can implement the principles of problem solving approach in Mathematics.

Assessment Criteria:

- 1 Written assignments, case studies and examinations to show that students understand the principles of problem solving in Mathematics.
- 2 Written assignments, case studies and written examinations to demonstrate the student's ability to interpret the principles of problem solving approach.
- 3 Written assignments, case studies and written examinations to demonstrate the student's ability to prepare the learner in applying problem solving strategies in Mathematics.

Learning Outcome 2:

Students have an understanding and sound knowledge of how people learn Mathematics

Assessment Criteria:

Written assignments, case studies and written examinations to show that students can reflect on the theories on the learning of Mathematics.

Learning Outcome 3:

Students can demonstrate an understanding of the development of the number concept in young learners.

Assessment Criteria:

- 1 Written assignments, case studies and written examinations to show that students understand the individual's conceptualisation of number concepts.
- 2 Written assignments, case studies and written examinations to show teaching strategies with regards to the performing of operations on whole numbers.

Learning Outcome 4:

Students know and understand the processes in the development of, spatial and shape concepts in the Intermediate and Senior phase.

Assessment Criteria:

Written assignments, case studies and written examinations to show that students can use/apply their knowledge of spatial, and shape concept formation in the classroom situation.

Learning Outcome 5:

Students can explain the principles, requirements and techniques of teaching fractions in the Intermediate Phase.

Assessment Criteria:

- 1 Written assignments, case studies and written examinations to show that students understand the principles, requirements and techniques when teaching fractions
- 2 Written assignments, case studies and written examinations to show that students understand the process that leads to teaching fractions.

3 LECTURER(S) AND CONTACT DETAILS

3.1 Lecturer

Contact details for the lecturer responsible for this module are as follows:

Mrs SM Kodisang

AJH van der Walt building 7-19, Unisa

kodissm@unisa.ac.za

(012) 429 3964

(Please Note: The dialling code for Pretoria 012 and for foreign students: dial +27 12.....)

All queries that are not of a purely administrative nature but are about the **content** of this module should be directed to me. Please have your study material with you when you contact me. Email address and telephone numbers are included above but you might also want to write to me. Letters should be sent to:

The module leader (PST201F)

Department of Mathematics Education
PO Box 392
UNISA
0003

PLEASE NOTE: Letters to lecturers may not be enclosed with or inserted into assignments.

3.2 Department

Department of Mathematics Education
(College of Education)
PO Box 392
UNISA
0003
Tel: 012 429 3964

3.3 University

If you need to contact the University about matters not related to the content of this module, please consult the publication *Study @ Unisa*, which you received with your study material. This brochure contains information on how to contact the University (e.g. to whom you can write for different queries, important telephone and fax numbers, addresses and details of the times certain facilities are open).

Always have your student number at hand when you contact the University. Please note that all administrative enquiries should be directed to *Study @ Unisa*. Enquiries will then be channelled to the correct department. The details are as follows:

- Fax number (RSA) (012) 429 4150
- Fax number (international) +27 12 429 4150
- Email study-info@unisa.ac.za

4 RESOURCES

4.1 Prescribed books

Van de Walle, JA, Bay-Williams, JM. & Karp, SP. **2016**. Elementary and middle school Mathematics: teaching developmentally, **9th** edition. New York: Pearson Education.

!! You MUST buy the textbook

There are no major differences between the 8th & 9th editions of the prescribed book *Elementary and middle school Mathematics – teaching developmentally* by Van de Walle et al. Below is a table that indicates the corresponding page numbers.

Eighth Edition (2014)	Ninth Edition (2016)
Chapter 1 (p.1)	Chapter 1 (p.25)
Chapter 2 (p.13)	Chapter 2 (p.37)
Chapter 3 (p.33)	Chapter 3 (p.57)
Chapter 4 (p.53)	Chapter 4 (p.81)
Chapter 5 (p.81)	Chapter 5 (p.108)
Chapter 6 (p.99)	Chapter 6 (p.128)
Chapter 7 (p.119)	Chapter 7 (p.151)
Chapter 8 (p.135)	Chapter 8 (p.166)
Chapter 9 (p.157)	Chapter 9 (p.191)
Chapter 10 (p.181)	Chapter 10 (p.218)
Chapter 11(p.203)	Chapter 11(p.246)
Chapter 12(p.229)	Chapter 12(p.271)
Chapter 13 (p.251)	Chapter 13 (p.301)
Chapter 14 (p.275)	Chapter 14 (p.323)

Chapter 15 (p.309)	Chapter 15 (p.363)
Chapter 16 (p.335)	Chapter 16 (p.395)
Chapter 17 (p.359)	Chapter 17 (p.427)
Chapter 18 (p.379)	Chapter 18 (p.453)
Chapter 19 (p.397)	Chapter 19 (p.477)
Chapter 20 (p.425)	Chapter 20 (p.512)
Chapter 21(p.459)	Chapter 21(p.550)
Chapter 22 (p.481)	Chapter 22 (p.582)
Chapter 23 (p.501)	Chapter 23 (p.606)
Appendix: Standards for Mathematical Practice (p.521)	Appendix A (A-1)
Appendix: Standards for Teaching Mathematics (p.523)	Appendix B (A-5)
Appendix: Guide to Blackline Masters (p.525)	Appendix C (A-7)
	Appendix D (A-13)
References (537)	References (R-1)
Index (557)	Index (I-1)

The textbook is based on the problem-solving approach, which allows you to teach Mathematics in a real-world context and fits in with the ethos of CAPS.

4.2 Recommended books

No recommended books are used for this module.

4.3 Electronic reserves (e-reserves)

No electronic Reserves are used for this module.

4.4 Library services and resources information

For brief information, go to www.unisa.ac.za/brochures/studies

For detailed information, go to <http://www.unisa.ac.za/library>. For research support and services of personal librarians, click on "Research support".

The library has compiled a number of library guides:

- finding recommended reading in the print collection and e-reserves – <http://libguides.unisa.ac.za/request/undergrad>
- requesting material – <http://libguides.unisa.ac.za/request/request>
- postgraduate information services – <http://libguides.unisa.ac.za/request/postgrad>
- finding, obtaining and using library resources and tools to assist in doing research – http://libguides.unisa.ac.za/Research_Skills
- how to contact the library/finding us on social media/frequently asked questions – <http://libguides.unisa.ac.za/ask>

You will be required to provide your login details, namely your student number and myUnisa password, in order to access the library's online resources and services. This will enable you to:

- view or print your electronic course material
- request library material
- view and renew your library material
- use the library's e-resources

Requesting books

Students are expected to purchase their own copies of the **prescribed books** listed in Tutorial Letters 101. A limited number of copies are housed in Unisa's libraries, subject to each branch library's lending regulations. Problems experienced in obtaining copies from booksellers should be directed to the Prescribed Book section at e-mail vospresc@unisa.ac.za or telephone +27 12 429 4152.

Electronic requests

The preferred way of requesting **recommended or additional books** is **online** via the library's catalogue. Go to <http://oasis.unisa.ac.za>; or via myUnisa, go to <http://my.unisa.ac.za> > Login > Library > Library catalogue; or for mobile access (AirPAC), go to <http://oasis.unisa.ac.za/airpac>.

Telephonic requests

This can be done on +27 12 429 3133.

Postal requests

Books may also be requested by completing one library book **request card** for each book. Request cards are included in your study package. These should be mailed to:

The Head: Request Services
Department of Library Services
PO Box 392
UNISA
0003
or faxed to +27 12 429 8128.

Enquiries about requested books should be sent to bib-circ@unisa.ac.za. Please note that requests should not be sent to this e-mail address, it is for enquiries.

Telephonic enquiries can be made at +27 12 429 3133/3134; there is also an after-hour voicemail service available at these numbers.

Requesting journal articles

Electronic course material or e-Reserves

Recommended material can be downloaded from the library's catalogue at <http://oasis.unisa.ac.za>. Under *search options*, click on *Course code search* and type in your course code, for example CST1501. Click on the *Electronic reserves* for the current year. The recommended articles are available in PDF (portable document format).

The **Adobe Reader** should be loaded on your computer so that you can view or print scanned PDF documents. This can be done free of charge at <http://www.adobe.com>.

Additional journal articles

The preferred way of requesting journal articles is **online** via the library's catalogue.

Go to <http://oasis.unisa.ac.za>; or via myUnisa, go to <http://my.unisa.ac.za> > Login > Library > Library catalogue; or for mobile access (AirPAC), go to <http://oasis.unisa.ac.za/airpac>.

Telephonic requests

Telephonic requests can be made at +27 12 429 3133/3134.

Postal requests

Journal articles may also be requested by completing an article **request card** for each item. These should be mailed to the same address as postal requests above or faxed to +27 12 429 8128.

Enquiries about requested articles should be addressed to bib-circ@unisa.ac.za and telephonic enquiries can be made at +27 12 429 3432.

Requesting literature searches

You may request a list of references on your topic from the library's information search librarians if you are enrolled for an undergraduate course which has a research essay. To request a literature search, go to the catalogue's homepage, and click on *Request a Literature Search*, fill in the form and return it to the address provided.

Unisa Library's services

The **Study @ Unisa** booklet, which is part of your registration package, lists all the services offered by the Unisa Library.

(See http://www.unisa.ac.za/contents/Study/docs/Study_unisa2018.pdf.)

The **Adobe Reader** should be loaded on your computer so that you can view or print scanned PDF documents. This can be done free of charge at <http://www.adobe.com>.

5 STUDENT SUPPORT SERVICES

For information on the various student support systems and services available at Unisa (e.g. student counseling, tutorial classes, language support), please consult the publication *Study @ Unisa*, which you received with your study material.

5.1 Study groups

It is advisable to have contact with fellow students. One way to do this is to form study groups. The addresses of students in your area may be obtained from the following department:

Directorate: Student Administration and Registration
PO Box 392
UNISA
0003

5.2 myUnisa

If you have access to a computer that is linked to the internet, you can quickly access resources and information at the University. The *MyUnisa* learning management system is Unisa's online campus that will help you to communicate with your lecturers, with other students and with the administrative departments of Unisa – all through the computer and the internet.

To go to the *myUnisa* website, start at the main Unisa website, <http://www.unisa.ac.za>, and then click on the “Login to *myUnisa*” link on the right-hand side of the screen. This should take you to the *myUnisa* website. You can also go there directly by typing in <http://my.unisa.ac.za>.

Please consult the publication *Study @ Unisa*, which you received with your study material, for more information on *myUnisa*.

5.3 Tutorials

At the moment, we offer face-to-face tutorials at regional learning centres across South Africa. A tutor can assist you to understand your study material, approach your assignments correctly, offer you more opportunities for practicing skills, and so on. We would like to start offering this service online for students who choose this option. We would also like start offering a tutor connection to students who have no access to our learning centres or the Internet, so that they at least have someone who can help them on request.

A **tutorial** is a regular meeting of students under the leadership of a tutor. The tutor leads you through aspects of the study material with which you are experiencing difficulties.

NB: Please refer to:

- <https://my.unisa.ac.za> for tutorials available at UNISA Learning Centres throughout the country --- click on the link

5.4 Videoconferencing

UNISA is currently providing tutorials by means of video-conferencing at some of its learning centres. This mode of delivery will be used as and when necessary.

Video-conferences:

- provide “live” tutorial support for learners who live in remote areas (where the facilities are available)
- is a viable technology for providing quality tutorial support while reducing costs; research has shown that there is “no significant difference” between the result obtained by distance learners and those obtained by students who have been taught in a traditional face-to-face environment

5.5 Tutors

Tutors employed in this programme are all professional people who have extensive practical and theoretical knowledge of the course(s) in which they conduct tutorials. They are appointed by UNISA Academic Departments in collaboration with the Department of Tutorial Services, Discussion Classes and Work-Integrated Learning (TSDL).

6 STUDY PLAN

Use the [Study @ Unisa](#) brochure for general time management and planning skills.

7 PRACTICAL WORK AND WORK-INTEGRATED LEARNING

This module will assist you in the planning of your relevant teaching practice lessons on mathematics in the Intermediate and Senior Phase.

8 ASSESSMENT

8.1 Assessment criteria

When assessing your assignments, we will focus on the following:

- Your understanding of the question
- Your ability to reason and accurately perform meaningful computations
- Relevance in answering the question
- Your ability to give examples that enable learners to like and understand mathematical concepts
- Mistakes in calculation or reasoning, or any mathematical error, for which marks will be deducted

8.2 Assessment plan

Assignments are seen as part of the learning material for this module. As you do the assignment, study the reading texts, consult other resources, discuss the work with fellow students or tutors or do research, you are actively engaged in learning. Looking at the assessment criteria given for each assignment will help you to understand what is required of you more clearly.

In some cases, additional assessment might be available on the *myUnisa* site for your module. For students attending tutorial sessions, tutors may also set additional tasks and give feedback in class.

There are **two** (2) assignments per semester. Assignment 01 contributes 20% and assignment 02 contributes 80% to the semester mark, see the table below:

Assignment	Semester	Type	Marks	Percentage (%)	Contribution to semester mark (%)
01	1	Multiple Choice Questions	10	100	20
02		Short Questions	100	100	80
01	2	Multiple Choice Questions	11	100	20
02		Short Questions	100	100	80

In some cases, additional assessment might be available on the *myUnisa* site for your module. For students attending tutorial sessions, tutors may also set additional tasks and give feedback in class. Ensure that your assignments reach the university well before the time

The nature of the module requires that the students study and cover a wide spectrum of module related knowledge. The content specified in the module should be delivered in a developmental format. As a result, knowledge development for this module is addressed in a form of assignments. As you do the assignments, you will get an opportunity to engage strongly with the content. However, the lecturer will sample certain questions (items) in the assignment for marking purposes, while others will not be marked. It is only the marked section of the assignment that will be used to compute the semester mark for each student. This arrangement is meant to encourage each student to study all sections (topics) of the module, as the knowledge of all these sections will be required for examination purposes. You are therefore advised to develop your own study schedule (plan, organise yourself and manage your time properly) and begin assignments soon after you received your study material

Please note: Although students may work together when preparing assignments, each student must write and submit his or her own individual assignment. In other words, you must submit your own ideas in your own words, sometimes interspersing relevant short quotations that are properly referenced. It is unacceptable for students to submit identical assignments on the basis that they worked together. That is copying (a form of plagiarism) and none of these assignments will be marked. Furthermore, you may be penalised or subjected to disciplinary proceedings by the university.

You will receive ZERO if you copy an assignment from a fellow student or directly from a memorandum.



You will receive the correct answers automatically for multiple-choice questions. For written assignments, markers will comment constructively on your work. However, feedback on compulsory assignments will be sent to **all students registered for this module in a follow-up tutorial letter**, and not only to those students who submitted the assignments. The tutorial letter number will be 201, 202, etc.

As soon as you have received the feedback, please check your answers. The assignments and the feedback on these assignments constitute an important part of your learning and should help you to be better prepared for the next assignment and the examination.

8.3 Assignment numbers

8.3.1 General assignment numbers

Assignments are numbered consecutively per module, starting from 01. This module requires two assignments which have to be submitted for the semester. You are compelled to number the assignments as stated in the table below. Incorrect numbering will result in assignments being delayed and maybe lost in the system.

8.3.2 Unique assignment numbers

Unique assignment numbers have to be used for multiple choice as well as for written assignments. Please use the numbers given in the table below.

8.4 Assignment due dates

The following assignments are compulsory and must be submitted:

SEMESTER 1	Unique number	Due date	Nature of assignment	Semester Mark
Assignment 01	708890	28 February 2018	Multiple-choice questions(MCQ)	20%
Assignment 02	786603	4 April 2018	Short questions & paragraphs	80%
SEMESTER 2	Unique number	Due date	Nature of assignment	Semester Mark
Assignment 01	772241	1 August 2018	Multiple-choice questions(MCQ)	20%
Assignment 02	813227	5 September 2018	Short questions & paragraphs	80 %

The summary of semester mark and the examination mark is as follows:

Assignments	= 20 % (This is your semester mark)
Examination mark	= 80%
Final mark	= 100%

8.5 Submission of assignments

PLEASE NOTE: Enquiries about assignments (e.g. whether or not the University has received your assignment or the date on which an assignment was returned to you) must be directed to *Study @ Unisa*.

You might also find information on *myUnisa*. To go to the *myUnisa* website, start at the main Unisa website, <http://www.unisa.ac.za>, and then click on the 'login to *myUnisa*' link under the *myUnisa* heading on the screen. This should take you to the *myUnisa* website. You can also go there directly by typing in <http://my.unisa.ac.za>.

Assignments should be addressed to:

Assignment Section

PO Box 392

UNISA

0003

You may submit written assignments and assignments done on mark-reading sheets electronically via myUnisa. Assignments may not be submitted by fax or email. For detailed information and requirements as far as assignments are concerned, see the brochure [Study @ Unisa](#), which you received with your study material.

To submit an assignment via *myUnisa*:

- Go to *myUnisa*.
- Log in with your student number and password.
- Select the module.
- Click on assignments in the menu on the left.
- Click on the assignment number you want to submit
- Follow the instructions on the screen.

IMPORTANT

When assignments are submitted electronically:

- Write or type your name and student number on the first page of the assignment. Number all questions ACCURATELY.
- Use a ruler and sharp pencil to draw diagrams. You may also draw diagrams electronically
- All assignments must be submitted in **pdf** format. No zip files will be accepted

8.6 The assignments

Assignments 01 and 02 are compulsory and have been added to the end of this tutorial letter. Please complete them and submit them as required.

8.7 Other assessment methods

None

8.8 The examination

DEMARCATION OR “SCOPING” FOR EXAMINATIONS AND ASSESSMENTS

NB: In terms of a decision reached by the College, lecturers may not demarcate or “scope” specific work for examination purposes and examination questions should be based on all the work covering the notional hours of modules. Lecturers should encourage students to learn everything. In cases where competencies or skills are assessed differently during the tuition period, the various methods of assessment will be spelled out clearly by the lecturer in Tutorial Letter 201.

According to Assessment Procedure Manual 2013, paragraph 4.5.2(e), the examination memoranda (guidelines, rubrics, and so on) shall not be made available to students.

Use your *Study @ Unisa* brochure for general examination guidelines and examination preparation guidelines.

8.8.1 Examination admission

The Department of Education requires the university to prove that a student was active during the period of tuition before the student will be subsidised by the Department of Education. Senate has approved that the submission of a compulsory assignment will be used to prove students' study activity. Examination admission is solely dependent on submission of Assignment 01. Admission to the examination is administered by the Examination Section and not your lecturers. Please study *Study @ Unisa* and contact the Examination Section should you have a problem with admission to the examination. Applications for rechecking or remarking should also be submitted to the Examination Section.

8.8.2 How will this work in practice?

In terms of Unisa's assessment policy, a sub-minimum of 40% in the written component(s) of the examination is required. The final mark of a student is a combination of the semester mark and the examination mark but in the case where a student does not obtain the required sub-minimum of 40% in the examination, the semester mark **does not** count. In such case, the final mark is the mark obtained in the examination.

8.8.3 Examination period

This module is offered in a semester period of 15 weeks. This means that if you are registered for the first semester, you will write the examination in May/June 2018 and the supplementary examination will be written in October/November 2018. If you are registered for the second

semester, you will write the examination in October/November 2018 and the supplementary examination will be written in May/June 2019.

Should you qualify for a supplementary exam, you will not receive any study material. You should visit the PST201F website and the discussion forum for study material or exam guidance

During the semester, the Examination Section will provide you with information regarding the examination in general, examination venues, examination dates and examination times.

8.8.4 Previous examination papers

Previous examination papers are available to students. We advise you, however, not to focus on old examination papers only as the content of modules and therefore examination papers changes from year to year. You may, however, accept that the type of questions that will be asked in the examination will be similar to those asked in the activities in your study guide and in the assignments. There is no exam demarcations. You must study all the work for the exam.

9 FREQUENTLY ASKED QUESTIONS

- 1 May I use any of the other editions of the prescribed book?

The 8th edition contains all the necessary information for this module. If you use earlier editions, you will have to find the page numbers by yourself

- 2 Are both assignments compulsory?

Both assignments are compulsory. Assignment 01 is your admission to the examination and it contributes 20% to the semester mark, assignment 02 contributes 80 % to the semester mark.

- 3 May I scan and submit the assignments on myUnisa?

*Both assignments may be submitted online. If you submit assignment 02 electronically we request that you submit it as a **pdf** document.*

The *Study @ Unisa* brochure contains an A-Z guide of the most relevant study information.

10 SOURCES CONSULTED

None

11 IN CLOSING

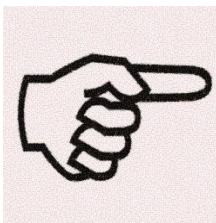
I wish you every success with your studies.

SM Kodisang

12 ADDENDUM

ADDENDUM A: Semester 1 assignments

*Take note of this
important
information:*



READ THE FOLLOWING SECTIONS
AGAIN BEFORE WRITING YOUR
ASSIGNMENTS:

Section 8.2 last paragraph

Section 8.8

Section 8.4

ASSIGNMENT 01

SEMESTER 1

ASSIGNMENT 01: COMPULSORY

CONTRIBUTES 20% TO SEMESTER MARK

Unique number: 708890

Due date: 28 February 2018

NO EXTENSION

The purpose of this assignment is to introduce you to a new way of thinking about the teaching and learning of mathematics. It also introduces new ideas on how learners learn, what kinds of mathematical knowledge they acquire, how they understand mathematics, and how we as teachers can use this knowledge and the advised approaches to teaching and learning to become more effective teachers.

Instructions

This assignment contains 10 multiple-choice questions.

You have to select the correct answer or statement in each question and then indicate your choice on the MARK-READING SHEET included for this purpose.

The questions are based on the work done in chapters 2 to 4 in your prescribed book, as well as learning units 1 and 2 of Tutorial Letter 501 (which will be your study guide).

Question 1

Select the correct statement.

A learning theory, such as constructivism, informs teaching. This means the following:

- [1] It is a teaching strategy.
- [2] It makes adaptations and modifications for particular learners possible.
- [3] It assists us in understanding how learners learn.
- [4] It helps learners make sense of mathematical concepts.

Question 2

The zone of proximal development (ZPD) as described by Vygotsky relates to a ...

- [1] learner's interaction with a knowledgeable other.
- [2] physical space between understanding and solving problems.
- [3] symbolic space in which learners need to talk to each other.
- [4] theory about how mathematics should be taught.

Question 3

Van de Walle et al (your prescribed book) explains semiotic mediation as ...

- [1] a range of knowledge that may be out of reach for a person to learn on his or her own.
- [2] the effort to connect existing ideas to new information.
- [3] the way in which an individual's beliefs, attitudes and goals affect and are affected by socio-cultural practices.
- [4] the strategy used by learners to figure out ways of finding a solution.

Question 4

Accommodation takes place when ...

- [1] language and other tools, such as diagrams, pictures and actions, are used to convey cultural practices.
- [2] listening to different ideas.
- [3] the brain revamps and replaces existing schemata.
- [4] a new concept fits in with prior knowledge and the new information expands an existing network.

Question 5

Creating opportunities for reflective thought means ...

- [1] ideas that are not connected to each other.
- [2] not allowing learners to develop deeper meanings for mathematics.
- [3] providing feedback to learners.
- [4] learners finding relevant ideas they possess and bringing them to bear on the development of the new idea.

Question 6

Procedures without connection tasks ...

- [1] focus on developing deeper levels of understanding.
- [2] are usually represented in multiple ways by using diagrams, manipulatives and symbols.
- [3] require some degree of cognitive effort.
- [4] show little ambiguity of what needs to be done and how to do it.

Question 7

Choose the **incorrect** statement.

The following concepts are described as the intertwined strands of proficiency:

- [1] strategic competence
- [2] procedural fluency
- [3] productive disposition
- [4] complex algorithmic thinking

Question 8

In order for students to build connections amongst ideas, different representations must be included in the instruction. Which of the following does not fit into the category?

- [1] creating a graph
- [2] abstract theory
- [3] manipulatives
- [4] drawing a diagram

Question 9

Choose the incorrect statement.

The value of a problem-based approach includes the following:

- [1] Learners focus their attention on ideas and sense making.
- [2] The approach emphasises getting it right and following the directions supplied by the teacher.
- [3] Learners develop reasoning and communication skills and make connections with existing knowledge.
- [4] The approach is more rewarding and more stimulating than the teach-by-telling approach.

Question 10

Which of the following statements is incorrect?

In the after phase of the lesson, the teacher will engage in the following activities:

- [1] preparing learners mentally and ensuring that all the expectations for products are clear
- [2] engaging the class in discussion
- [3] giving learners space to explain their solutions and processes
- [4] allowing learners to defend their answers and then opening the discussion to the class

[10]

ASSIGNMENT 02

SEMESTER 1
ASSIGNMENT 02
CONTRIBUTES 80% TO SEMESTER MARK
Unique number: 786603
Due date: 4 April 2018

NB: Submit solutions for PARTS B, C, D and E.

This assignment consists of five parts:

PART A: Important! Go through activities 3.12 to 3.14 in Tutorial Letter 501, pages 63-66 and learn how to read and write numbers. [0]

PART B: Questions are taken from units 1 and 2 in Tutorial Letter 501, as well as from chapters 2 to 4 in your prescribed book. [45]

PART C: Questions are taken from unit 3 ("Whole number concepts") in Tutorial Letter 501, as well as from chapters 11 to 13 in your prescribed book. [50]

PART D: Questions are taken from unit 4 ("Fraction concepts") in Tutorial Letter 501, as well as from chapters 15 to 17 in your prescribed book. [70]

PART E: Questions are taken from unit 5 ("Shape and Shape") in Tutorial Letter 501, as well as from chapter 20 in your prescribed book. [55]

TOTAL: [220]

PART B

Do the following activities in Tutorial Letter 501 (your study guide). You are also referred to sections in the prescribed book.

ACTIVITY	MARKS
Activity 1.1	4
Activity 1.2 (pictures 2 and 6)	4
Activity 1.3, number 3 (three roles in each case)	3
Activity 1.6	4
Activity 1.7(1 a and b)	3
Activity 1.9 (bullets 1–3)	3
Activity 1.11, number 2	2
Activity 1.13, number 3	5
Activity 1.14, number 1	5
Activity 2.1	3
Activity 2.6, number 2	3
Activity 2.7, number 2	6
TOTAL	45

PART C

These questions relate to chapters 11 to 13 of the prescribed book:

- 1 Name the three ways one can count a set of objects, and explain how these methods of counting can be used to combine concepts and written names of numbers. (6)
- 2 How can learners learn to write two-digit numbers in a way that they are connected to the base 10 meaning of ones and tens? (4)
- 3 Use Dienes blocks to show how to find the solution to the following problems:
 - a) $96 + 28$
 - b) $103 - 19$ (6)
- 4 Test the following numbers for divisibility by 6, 9, and 11. (Do not divide or factorise.)
 - a) 22 587 486 185
 - b) 40 233 322 496 (6)
- 4 The Sieve of Eratosthenes is a well-known method of finding prime numbers.
- 5
- 5.1 Use the method given alongside the chart to find all the prime numbers between 1 and 100. (5)

Sieve of Eratosthenes

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

METHOD

Cross out 1 (1 is not prime).
 Cross out all the multiples of 2, 3, 5 and 7, but not these numbers themselves.
 The numbers that are not crossed out will be prime numbers.
Circle all the prime numbers.

- 5.2 Show a way in which a hundreds chart can aid the teaching of division of two-digit numbers. Illustrate using $60 \div 14$ and support your illustration with brief explanations. (3)
- 6 Use the vertical and horizontal algorithms to find the sum or difference of the following. (Explain the "borrow and carry" concepts.)
- a) $209 + 136$
- b) $351 - 168$ (4)
- 7 How do standard algorithms differ from student-invented strategies? Explain the benefits of invented strategies over standard algorithms (give at least three valid points). (3)
- 8 Draw pictures showing how 15×3 could be modelled using counters. (Support your illustrations with brief explanations.) (4)
- 9 Use the method of compensation to show how you can make the addition of $467 + 329 + 458$ easier. (3)
- 10 A learner in your class states that the value of the underlined digit in $6\underline{7}579$ is 7. How will you help the learner overcome this misconception? (2)
- 11 Three thousand exercise books are arranged into three piles. The first pile has 10 more books than the second pile. The number of books in the second pile is twice the number of books in the third pile. How many books are there in the third pile? (4)

TOTAL : 50

PART D

These questions relate to chapters 15 to 17 of the prescribed book:

- 1 What does partitioning mean? Explain and illustrate this concept. (4)
- 2 Give examples of each of the three categories of fractions. [Illustrate using diagrams.]
 - 2.1 area model
 - 2.2 set model
 - 2.3 length model (6)
- 3 In the context of choosing a “whole”, explain when a “fifth” is not always equal to a “fifth”. Give an example. (3)
- 4 Use the correct language to explain the difference between the expressions:

“It is the third of October.”

“You are the third in the queue.”

“I want a third of the pizza.”

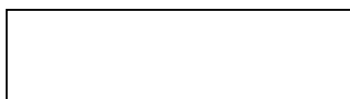
What types of numbers are we dealing with in the above expressions? (3)
- 5 The exercise is based on “Pause and Reflect” in your prescribed textbook, pages 321 and 322 as well as pages 380 and 381.

*No “free-hand” sketches
will be accepted.*

Use a ruler and sharp pencil to
make accurate drawings.

- 5.1 If the rectangle is one whole, then show

- one eighth
- three quarters
- three halves



Redraw the same
rectangle three times.

(3)

- 5.2 If twenty counters are a whole set, how many are there in seven tenths of the set? Illustrate using an example. (2)



Redraw and illustrate by
grouping and colouring
in.

5.3 If eighteen counters are two thirds of a set, how many counters are in a full set?

Illustrate using an example.

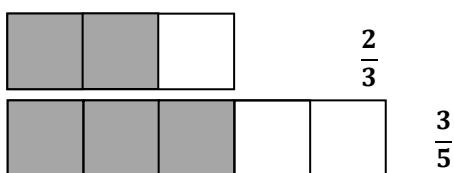
(2)



Redraw, group
and colour in.

5.4 Riana makes the following sketches to compare the fractions $\frac{2}{3}$ and $\frac{3}{5}$ by drawing the diagrams set out below. She then states that $\frac{3}{5}$ is bigger than $\frac{2}{3}$. Discuss Riana's misconception, and explain how you will rectify it.

(6)



Use a ruler and sharp pencil to make accurate drawings. (Computer drawings are acceptable.)

WARNING

No "free-hand" sketches will be accepted.

5.5 If this triangle is one sixth of the whole, what would the whole look like?

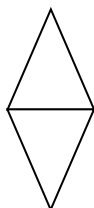
(2)



Copy the shape
and illustrate it.

5.6 If this figure is two sixths of the whole, draw a shape that could be the half.

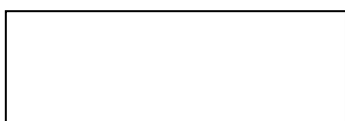
(2)



Copy the shape
and illustrate it.

5.7 If this rectangle consisted of five halves, what would the whole look like?

(2)



Copy the shape
and illustrate it.

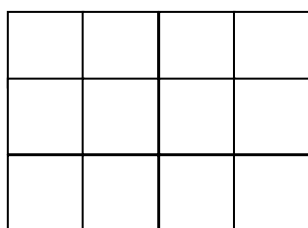
6 Use the following models to show the equivalence of the fractions $\frac{5}{6}$ and $\frac{10}{12}$:

6.1 a set model

6.2 an area model

(6)

- 7 Compare the fractions $\frac{2}{3}$ and $\frac{1}{4}$ by making use of a number line. (You should be able to arrange the fractions from small to big.) Make sure that you choose the whole correctly, and make accurate drawings. (6)
- 8 Use a standard algorithm to calculate $3 - \frac{1}{3} - \frac{1}{5}$ (4)
- 9 Use a number line to illustrate to a Grade 5 learner how to add $2\frac{1}{6} + \frac{1}{2}$. Indicate the demarcations clearly on the number line. (4)
- 10 A learner in your class has a problem with mixed numbers. Identify three misconceptions that learners might have and explain how you can prevent such misconceptions. Use examples to support your argument. (6)
- 11 Bonolo has $2\frac{3}{4}$ hours to finish her three activities for the day (i.e. washing clothes, cleaning the house, and cooking for the family). If she divides her time evenly, how many hours can she spend on each activity? Illustrate the solution using drawings. (5)
- 12 Use the grid below to illustrate $\frac{2}{3}$ of $\frac{3}{4}$. Show the process clearly by making use of different types of shading. (4)



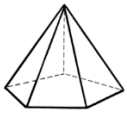
TOTAL : 70

PART E

These questions relate to chapter 20 of the prescribed book:

- 1 Describe in your own words the first three Van Hiele levels of geometric thought (levels 0, 1 and 2). How do the activities, which you will give learners on the three levels, differ? (6)
- 2 Draw an assortment of different types of flat shapes (2D) that include polygons and non-polygons (at least three of each kind). Explain your classification. Why is this type of exercise necessary for learners on Van Hiele level 0? (8)
- 3 Draw the polygons described by the following characteristics. Do your sketches using a ruler and draw them very neatly. Label the vertices of each polygon.
 - 3.1 isosceles, right-angled triangle
 - 3.2 isosceles trapezium (4)
- 4 Draw neat diagrams of the following 3D objects. Name each of the 3D objects (a mathematical name).
 - 4.1 regular hexahedron
 - 4.2 a hexahedron that is a pyramid (4)
- 5 Which quadrilaterals are described by the following characteristics? (Name them.) Make a neat drawing of each. (Do not assume properties that are not given.)
 - 5.1 a rectangle with equal adjacent sides
 - 5.2 one pair of opposite angles that is equal and diagonals that are perpendicular (4)
- 6 Complete the following table to classify and describe the 3D objects. Name each of the objects (a mathematical name). (15)

3D objects	Mathematical name	No. of faces	No. of edges	No. of vertices	Polyhedron or non-polyhedron
a 					
b 					

c						
d						
e						

7 Draw neat diagrams of the following 3D objects, made up of (name the 3D object):

7.1 two circles and a rectangle

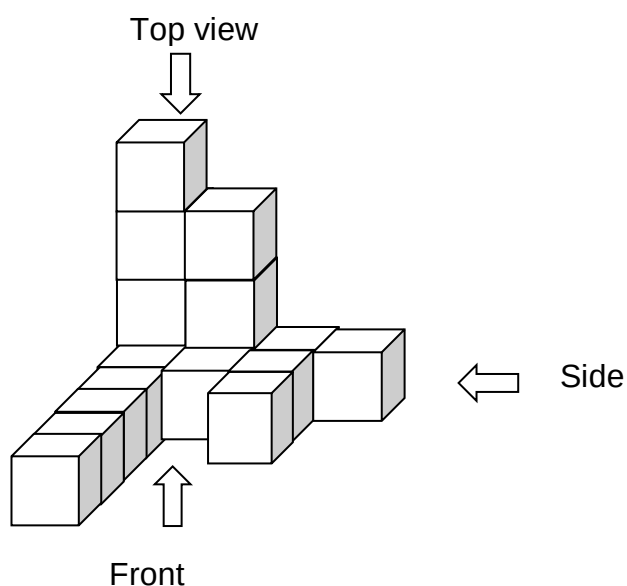
7.2 two pentagons and rectangles (4)

8 Draw the nets of the following polyhedra:

8.1 tetrahedron

8.2 octagonal pyramid (4)

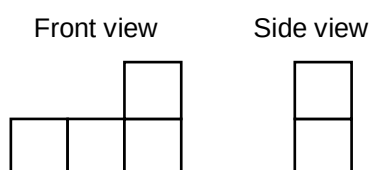
9 Draw the front, top and side view of the following structure: (3)



10 The side view and front view of a 3D object, built from cubes, are given.

Draw the 3D object.

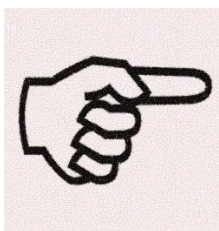
(3)



TOTAL : 55

ADDENDUM B: Semester 2 assignments

Take note of this important information:



READ THE FOLLOWING SECTIONS **AGAIN** BEFORE WRITING YOUR ASSIGNMENTS:

Section 8.2 last paragraph

Section 8.8

Section 8.4

ASSIGNMENT 01

SEMESTER 2

ASSIGNMENT 01: COMPULSORY

CONTRIBUTES 20% TO SEMESTER MARK

Unique number: 772241

Due date: 1 August 2018

NO EXTENSION

The purpose of this assignment is to introduce you to a new way of thinking about the teaching and learning of mathematics. It also introduces new ideas on how learners learn, what kinds of mathematical knowledge they acquire, how they understand mathematics, and how we as teachers can use this knowledge and the advised approaches to teaching and learning to become more effective teachers.

Instructions

This assignment contains 10 multiple-choice questions.

You have to select the correct answer or statement in each question and then indicate your choice on the MARK-READING SHEET included for this purpose.

The questions are based on the work done in chapters 2 to 4 in your prescribed book, as well as learning units 1 and 2 of Tutorial Letter 501.

PART A

Question 1

In a Vygotskian classroom, four principles will always apply. Which of the following statements is INCORRECT?

- [1] Listening and development are social, collaborative activities.
- [2] The zone of proximal development can serve as a guide for curricular and lesson planning.
- [3] Classroom activities should be reality based and applicable to the real world.
- [4] Learning extends to the home and other out-of-school environments and activities, and all learning situations should be related.

Question 2

Procedural knowledge of mathematics can be described as ...

- [1] understanding operations with numbers.
- [2] making sense of algorithms.
- [3] knowledge of rules and procedures to carry out.
- [4] knowledge of the relationships between numbers.

Question 3

Integrated network of concepts can also be called ...

- [1] cognitive schemata.
- [2] social interaction.
- [3] new knowledge and skills.
- [4] thinking tools.

Question 4

Relational understanding can be linked to ...

- [1] learning that occurs in a vacuum.
- [2] producing correct answers rather than developing mathematical understanding.
- [3] producing previously learnt facts.
- [4] knowing what to do and why.

Question 5

A practice that encourages a classroom environment that is conducive to the “doing of mathematics” is ...

- [1] when errors or strategies that did not work are not taken as opportunities for learning.
- [2] emphasising the importance of one strategy in a teaching and learning situation.
- [3] students looking for and discussing connections.
- [4] working on an easy problem and always getting the correct answer.

Question 6

Which of the following cannot be considered the strand of mathematical proficiency?

- [1] strategic competence
- [2] limited cognitive effort
- [3] adaptive reasoning
- [4] conceptual understanding

Question 7

Meaningful learning has the following characteristics. Which one does not fit?

- [1] Learners work to get the right answers.
- [2] Learners justify their answers.
- [3] Learners conjecture about ways of solving a problem.
- [4] Learners figure out ways to find a solution.

Question 8

Which of the following does not indicate lower-order demands of tasks?

- [1] It is algorithmic.
- [2] It requires learners to analyse task.
- [3] It has no connections to underlying procedures.
- [4] It requires no explanations.

Question 9

Understanding is defined as ...

- [1] ideas and skills that are well known to us.
- [2] a measure of the quality and quantity of connections that an idea has with existing ideas.
- [3] the number of connections in our networks of ideas.
- [4] knowledge and skills that we can apply.

Question 10

Good problems have multiple entries. This implies that ...

- [1] learners should not draw on their own network of mental tools, concepts and ideas.
- [2] teachers should dictate how learners must think about a problem in order to solve it.
- [3] the diversity of learners in the classroom should not be accommodated to avoid problems.
- [4] learners should use different ideas of their own to solve a problem.

Question 11

The following strategy may be used in the “before phase” of a lesson as Van de Walle (your prescribed textbook) explains. The teacher ...

- [1] summarises the main ideas of the lesson.
- [2] ensures that learners understand the problem before setting them to work.
- [3] starts marking classwork.
- [4] explains the correct way in which the homework must be done.

[11]

ASSIGNMENT 02

SEMESTER 2
ASSIGNMENT 02
CONTRIBUTES 80% TO SEMESTER MARK
Unique number: 813227
Due date: 5 September 2018

NB: Submit solutions for PARTS B, C, D and E.

This assignment consists of five (5) parts:

- PART A** **Important!** Go through activities 3.12 to 3.14 in Tutorial Letter 501, pages 63-66 to learn how to read and write numbers. [0]
- PART B** Questions are taken from units 1 and 2 in Tutorial Letter 501, as well as from chapters 2 to 4 in your prescribed book. [45]
- PART C** Questions are taken from unit 3 ("Whole number concepts") in Tutorial Letter 501, as well as from chapters 11 to 13 in your prescribed book. [55]
- PART D** Questions are taken from unit 4 ("Fraction concepts") in Tutorial Letter 501, as well as from chapters 15 to 17 in your prescribed book. [65]
- PART E** Questions are taken from unit 5 ("Shape and Shape") in Tutorial Letter 501, as well as from chapter 20 in your prescribed book. [55]

TOTAL : 220

PART B

Do the following activities in Tutorial Letter 501 (your study guide). You are also referred to sections in the prescribed book.

ACTIVITY – ASSIGNMENT 02	MARKS
Activity 1.1	4
Activity 1.2 (pictures 3 and 4)	4
Activity 1.3, number 2. Choose any three words and use each in a sentence to relate them to the doing of mathematics.	3
Activity 1.6	4
Activity 1.7(1 a and b)	3
Activity 1.9 (bullets 4–6)	3
Activity 1.11, number 3	2
Activity 1.13, number 3	5
Activity 1.14, number 1	5
Activity 2.1	3
Activity 2.6, number 2	3
Activity 2.7, number 2	6
TOTAL	45

PART C

These questions relate to chapters 11 to 13 of the prescribed book:

- 1 Name the three ways in which one can count a set of objects, and explain how these methods of counting can be used to combine concepts and written names for numbers. (6)
- 2 Use the number 78 to explain “face value” as one of the distinct levels of the understanding of place value and discuss how you could deal with the challenge at this level to ensure that learners gain full understanding of place value. (3)
- 3 Test the number 102 582 557 for divisibility by 8, 9 and 11. (Do not factorise or divide – no calculator may be used.) (6)
- 4 The Sieve of Eratosthenes is a well-known method of finding prime numbers.
 - 4.1 Use the method given alongside the chart to find all the prime numbers between 1 and 100. (5)

Sieve of Eratosthenes

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

METHOD

Cross out 1 (1 is not prime).

Cross out all the multiples of 2, 3, 5 and 7, but not these numbers themselves.

The numbers that are not crossed out will be prime numbers.

- 4.2 Describe two ways in which the hundreds chart can be used to illustrate place value. (4)
- 4.3 Use the factor tree to determine the prime factors of 240 and express it as a product of its prime factors. (4)

- 5 Draw Dienes blocks to show how to find the solution to
- a) $107 + 19$
 - b) $158 - 109$ (6)
- 6 Use the vertical and horizontal algorithms to find the sum or difference of the following. (Explain the "borrow" and "carry" concepts.)
- a) $601 + 935 + 370$ (4)
 - b) $458 - 263$ (4)
- 7 Use the number line to show the subtraction of $500 - 472$. (2)
- 8 Use the method of compensation to show how you can make the multiplication of 198×25 easier. (3)
- 9 "Algorithm invention is itself a significantly important process of 'doing mathematics'." Discuss this statement by giving two valid points. (2)
- 10 According to Van de Walle et al, an estimate refers to a number that is a suitable approximation for an exact number, given the particular context. In view of this statement, briefly discuss each of the following ideas and for each, provide an appropriate example:
- a) measurement estimation
 - b) quantity estimation
 - c) computational estimation (6)

TOTAL : 55

PART D

WARNING!!

No free-hand sketches will be accepted.

These questions relate to chapters 15 to 17 of the prescribed book:

- 1 Give examples of each of three categories of fractions. [Illustrate it using diagrams.]

1.1 area model

1.2 set model

1.3 length model

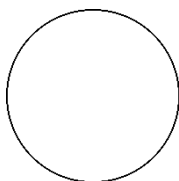
(6)

- 2 In the context of choosing a “whole”, explain when a “quarter” is not always equal to a “quarter”. Illustrate it using an example.

(3)

- 3 If the given circle represents one whole, then show

- a half
- two thirds
- five sixths



Redraw the same circle three times.

(6)

- 4 If 24 counters are a whole set, how many are there in five sixths of the set? Illustrate it using an example.

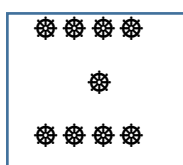
(2)



Redraw and illustrate by **grouping and colouring in.**

- 5 If 9 counters are a whole, how many are there in seven thirds of the set? Illustrate it using an example.

(2)



Redraw and illustrate by **grouping and colouring in.**

- 6 Mavis ate $\frac{3}{10}$ of her birthday cake. She decided to give her brother $\frac{2}{3}$ of what is left of the cake. What fraction of the cake was eaten by the brother? (4)

Illustrate your answer by using diagrams.

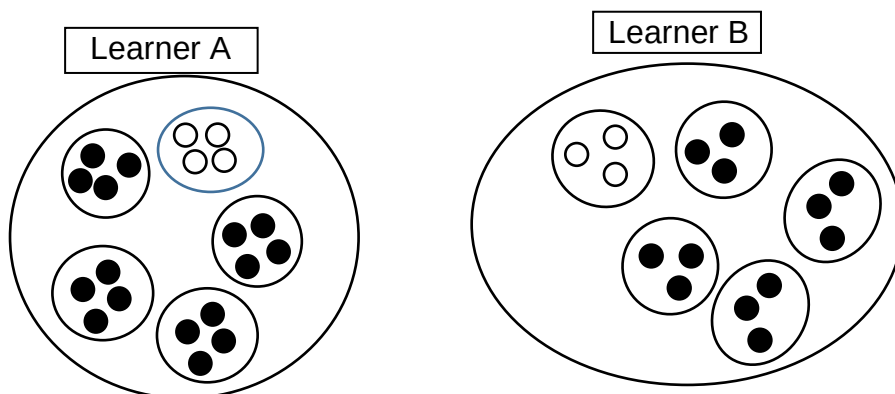
Show the process clearly by making use of different types of shadings.

- 7 If this trapezium was 50% of the whole, what would the whole look like? (2)



Copy accurately and illustrate it.

- 8 Below are two representations made by learners to explain the concept $\frac{4}{5}$ of 15 (four fifths of 15).



Answer the following questions:

- 8.1 What is the whole in each case? (2)
 - 8.2 Into how many parts did learner A divide the whole? (1)
 - 8.3 Into how many parts did learner B divide the whole? (1)
 - 8.4 Explain in detail which one of the learners showed an understanding of the concept *four fifths of 15*. (3)
- 10 Use the following models to show the equivalence of the fractions $\frac{3}{4}$ and $\frac{6}{8}$:
- 10.1 a set model
 - 10.2 an area model
 - 10.3 a number line (9)

- 11 Compare the fractions $\frac{1}{4}$; $\frac{2}{3}$ and $\frac{5}{6}$ by making use of the area model. (You should be able to arrange the fractions from small to big.) Make sure that you choose the whole correctly, and make accurate drawings. (5)
- 12 What is the difference between standard algorithms and student-invented strategies? Give at least two valid points. (2)
- 13 Use a standard algorithm to calculate: $6 - \frac{2}{3} - \frac{1}{6}$ (3)
- 14 Markus travelled one quarter of his destination. He still has to cover 24 km to reach the third way mark.
- 14.1 How many kilometres does he still have to travel to reach the destination? [Use a diagram to help you.] (5)
- 14.2 Identify mathematical concepts and skills (background information) that learners need to master to be able to answer this question. (2)
- 15 Use “stage 3 of teaching subtraction of fractions” to explain and illustrate how you will solve the following:
- $\frac{3}{4} - \frac{1}{3}$ (Refer to unit 4 of Tutorial Letter 501.) (4)
- 16 Develop an activity for Grade 5 learners to assist them in understanding that the numerator and the denominator are not separate values but a single number. Use a number line to demonstrate your answer. (3)

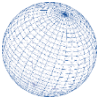
[65]

PART E

These questions relate to chapter 20 of the prescribed book:

- 1 Describe in your own words the first three Van Hiele levels of geometric thought (levels 0, 1 and 2). How will the activities, which you will give learners on these three levels, differ? (6)
- 2 “One of the main differences between reasoning at the visual level and that at the descriptive level lies in the difference in judgement that the child makes.” Briefly discuss this statement by giving four valid points. (7)
- 3 Draw the triangles described by the following properties. Do your sketches using a ruler and ensure they are very neatly drawn. (You may also do it on a computer.)
 - 3.1 equilateral triangle
 - 3.2 isosceles, right-angled triangle (2)
- 4 Which quadrilaterals are described by the following characteristics? (Name them.) Make a neat drawing of each. Do not assume properties that are not given.
 - 4.1 one pair of opposite sides, parallel
 - 4.2 one diagonal bisects the other diagonal perpendicularly (4)
- 5 Is a rhombus a special kind of square? Motivate your answer. (2)
- 6 Is a rectangle a special kind of parallelogram? Motivate your answer. (2)
- 7 Complete the following table to classify and describe 3D objects. Name each of the objects (a mathematical name). (15)

3D objects	Mathematical name	Polyhedron or non-polyhedron	No. of faces	No. of edges	No. of vertices
a 					
b 					

3D objects	Mathematical name	Polyhedron or non-polyhedron	No. of faces	No. of edges	No. of vertices
c 					
d 					
e 					

8 Draw neat diagrams of the following polyhedra. (Name each polyhedron.)

8.1 A polyhedron made up of:

- a) four triangular faces
- b) an octagonal and triangular faces

8.2 A hexahedron, which is a pyramid

8.3 A prism, which is made up of two triangles and rectangles (8)

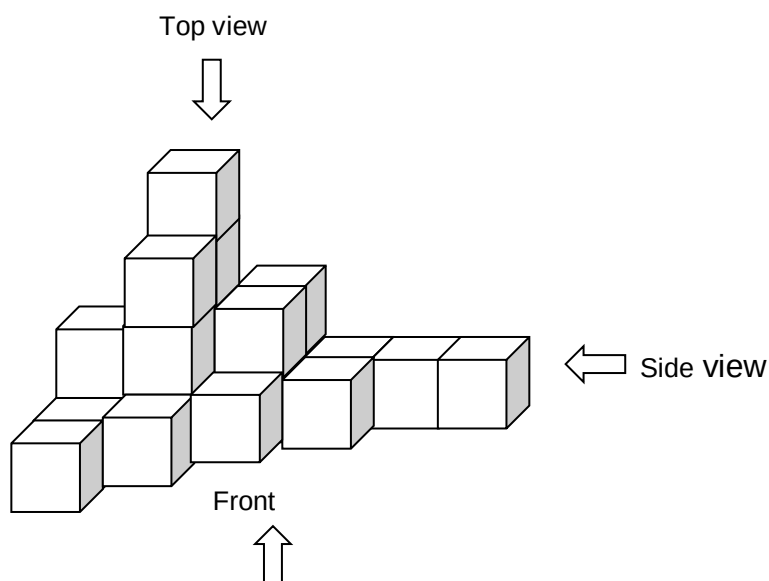
9 Draw the nets of the following polyhedra:

9.1 octahedron

9.2 hexahedron

9.3 pentagonal prism (6)

10 Draw the front, top and side view of the following structure: (3)



TOTAL : 55