

Aligned to DBE
Revised ATPs

Platinum



Mathematical Literacy

Navigation pack



**FET PHASE
GRADE 11**

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Mathematical Literacy Grade 11 Navigation Pack

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Dear Teacher

The National State of Disaster due to the Covid-19 pandemic has resulted in the disruption of Education in South Africa and the loss of valuable teaching time and disruption of the school calendar.

As a result of this, the DBE has created and released revised Annual Teaching Plans (ATPs) to assist schools and teachers in ensuring the 2021 school year is completed. The 2021 ATPs are based on the revised ATPs that were developed in 2020. It is important to note that fundamental and core topics are retained in the 2021 ATPs. Some of the strategies that have been used in the process of developing the 2021 DBE ATPs are:

- reduction of content covered in certain topics
- merging of topics
- deleting topics
- revising the assessment guidelines
- reduction in teaching time for certain topics
- resequencing of topics/concepts

At Pearson South Africa, we believe that education is the key to every individual's success. To ensure that despite the challenges, teachers and learners can meet all the necessary learning outcomes for the year, we have created the Navigation Pack, a free resource to support teachers and learners during this challenging time.

The Navigation Pack aims to summarise and highlight the changes in the 2021 DBE ATP and provide teachers and learners with worksheets that focus on impacted topics in the curriculum.

Due to resequencing of topics, the order of topics in the textbook that is currently used in the classroom may not be aligned to the new sequence of topics in the ATP. Pearson has included page numbers from one of our tried and tested series, Platinum, to guide the teacher and learners as they navigate through the textbook, with the 2021 ATP. The Navigation Pack has a set of assessments based on the Section 4 changes and the revised assessment guidelines.

Covid-19 safety guidelines for teachers and learners

Gatherings at school

Where schools are open for learning, it is up to management to take decisive action to ensure sites are not simultaneously used for other functions such as shelters or treatment units in order to reduce the risk.

Implement social distancing practices that may include:



- A staggered timetable, where teachers and learners do not arrive/leave at the same time for the beginning and end of the school day.
- Cancelling any community meetings/events such as assemblies, cake sales, market day, tuckshop, after-care classes, matric dance, Eisteddfod and other events.
- Cancelling any extra-mural activities such as ballet classes, swimming lessons, sport games, music class and other events that create a crowd gathering.
- Teaching and modeling creating space and avoiding unnecessary touching.
- Limiting movement and interaction between classes.
- Schools with an established feeding scheme plan are to ensure that hygiene and social distancing is always implemented. Teachers and staff members assisting with food distribution are to wear masks, sanitise prior to issuing food items and learners are to stand 1,5m apart in the queue.

Wear a mask at all times.



1. Restrooms/toilets

Hand washing

Washing hands with soap and water  or using alcohol-based hand sanitisers  is one of the most important ways to help everybody stay healthy at school. Critical to this is preparing and maintaining handwashing stations with soap and water at the toilet and in each classroom.



Teachers and learners should always wash their hands after:

- eating
- entering the classroom
- using the toilet
- blowing your nose or coughing
- touching tears, mucous, saliva, blood or sweat.

2. Premises and Classroom setting

When schools open, classroom settings should be altered in order to promote hygiene, safety and social distancing.

Changed classroom settings may include:

- Cleaning and disinfecting school buildings, classrooms and especially sanitation of facilities at least once a day, particularly surfaces that are touched by many people (railings, lunch tables, sports equipment, door and window handles, toys, teaching and learning tools etc.).
- Ensure the proper ventilation and fresh flow of air through classrooms.
- Providing learners with vital information about how to protect themselves by incorporating the importance of hygiene, handwashing and other measures of protecting themselves, into the lessons.
- Promoting best handwashing and hygiene practices and providing hygiene supplies.

- Prepare and maintain handwashing stations with soap and water, and if possible, place alcohol-based hand sanitisers in each classroom, at entrances and exits, and near lunchrooms and toilets.



- Ensure teachers and learners wear a mask at all times.



Social distancing

- Space the learners out in the classroom (or outdoors) – try to keep learners separated by a minimum of 1,5m.



- Create space for learners' desks to be at least 1,5m apart

- Learners should not share cups, eating utensils, or food
- Do not let learners eat items that fall on the floor or chew on pencils or other objects

- Learners are not to exceed 30 per class or 50% of original class size



- Avoid close contact, like shaking hands, hugging or kissing



3. Social behaviour

It is extremely vital during a pandemic that focus is not only directed towards optimal physical health and hygiene but finding ways to facilitate mental health support.

- Treat everybody with respect and empathy – no teasing about Covid-19.
- Encourage kindness towards each other and avoid any stereotyping when talking about the virus.
- Stay home if you have a temperature or are ill.
- Do not touch people who are ill, but be empathetic.


Wear a mask at all times.



How to use this Navigation Pack

Revised DBE Teaching Plan: Comprehensive summary of the CAPS topics according to the revised ATPs.

Navigation Plan: Link to the Platinum series, as well as additional resources in the Navigation Pack.

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
Themes	Topic	Unit	Time	Links to Platinum series and Pearson Navigation Pack	Page reference
WAVES, SOUND AND LIGHT	Electromagnetic radiation [9 hrs] *10	The nature of electromagnetic radiation	2 hrs	Plat LB Plat TG	Page 84–90 Page 46–48
		The electromagnetic spectrum	3 hrs		
		The electromagnetic radiation as particle – Photon	4 hrs	Navigation Pack: Targeted Worksheet 1	Page 15
	Consolidation and revision [16 hrs]		16 hrs		
HYDROSPHERE *11					
ASSESSMENT		End of year exam		Navigation Pack: Paper 1 Physics	Page 45
		End of year exam		Navigation Pack: Paper 2 Chemistry	Page 56
 TOTAL HOURS = 25					

*10 This topic has been moved from term 1 to term 4. This topic is on pages 84–90 in the Platinum LB, and pages 46–48 in the Platinum teacher's guide book.

*11 The whole topic has been removed.

Assessments for the Term as per the revised ATPs and the Section 4 amendments.

Footnotes provide any additional information.


Link to a targeted worksheet in the Navigation Pack, that focus on impacted or challenging topics in the curriculum.

Link to an exemplar assessment in the Navigation Pack, that was created with Section 4 and curriculum changes in mind.

Navigation Guide

Term 1

REVISED DBE ANNUAL TEACHING PLAN			NAVIGATION PLAN		
THEMES/TOPIC	TOPIC/UNIT	UNIT/CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PLATINUM SERIES AND PEARSON NAVIGATION PACK	PAGE REFERENCE
Measurement	Conversions	<ul style="list-style-type: none"> Metric to Imperial Equivalent/ proportionality conversions Temperature conversions (°C to °F) 	4 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG Navigation Pack: Targeted Worksheet 	<ul style="list-style-type: none"> Page 32–35 Page 32–34
	Time	<ul style="list-style-type: none"> Duration (hours to minutes and vice versa) 	4 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 36–39 Page 35–39
Patterns and relationships	Working with two relationships	<ul style="list-style-type: none"> Constant difference (2 relationships) Inverse proportion (2 relationships) 	4 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 14–15 Page 18–19
		<ul style="list-style-type: none"> Constant ratio between consecutive terms A combination of any two of direct, indirect or constant relationships 	2 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 14–15 Page 18–19
		<ul style="list-style-type: none"> Representations (2 relationships) Equations/ Formulae <ul style="list-style-type: none"> dependent and independent variables tables and graphs 	6 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG Navigation Pack: Targeted Worksheet 1 	<ul style="list-style-type: none"> Page 14–30 Page 20–30
		<ul style="list-style-type: none"> Use formulae/ equations, tables and graphs to: <ul style="list-style-type: none"> compare different tariff systems determine break- even point compare different banking options 	8 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 20–31 Page 20–30


REVISED DBE ANNUAL TEACHING PLAN			NAVIGATION PLAN		
THEMES/TOPIC	TOPIC/UNIT	UNIT/CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PLATINUM SERIES AND PEARSON NAVIGATION PACK	PAGE REFERENCE
Financial documents	Financial documents	<ul style="list-style-type: none"> Terminology and calculations of the values on the documents Income (fixed/variable and occasional): <ul style="list-style-type: none"> sources of income personal income (e.g. salaries, wages and commission) business income (e.g. sales, donations and grants) Expenditure: <ul style="list-style-type: none"> personal expenditure (e.g. living expenses, personal tax, loan repayments) business expenditure (e.g. taxes, salaries, running expenses) 	8 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 42–51 Page 43–52
Maps, plans and other representations	Plans and other representations	<ul style="list-style-type: none"> Maps (directions and point locations): <ul style="list-style-type: none"> Seating plans Layout plan Street maps Road and rail maps (national/provincial) Residential maps 	7 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 130–137 Page 95–98
ASSESSMENTS		Assignment 1 (1 hour) 50 marks Term 1 Test: (1 hour) 50 marks		Navigation Pack: Assignment exemplar Test exemplar	Platinum LB Page: 81–83 Platinum TG Page 63–65
			 TOTAL HOURS = 43		

Term 2

REVISED DBE ANNUAL TEACHING PLAN			NAVIGATION PLAN		
THEMES/TOPIC	TOPIC/UNIT	UNIT/CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PLATINUM SERIES AND PEARSON NAVIGATION PACK	PAGE REFERENCE
Finance	Interest	<ul style="list-style-type: none"> Loans Investments Bank accounts Use simple and compound decay formulae and solve problems (including straight line depreciation on a reducing balance) *1 Effect of different periods of compounding growth and decay (including effective and nominal interest rates) *2 	6 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 88–93 Page 68–71
	Banking	<ul style="list-style-type: none"> Savings account Cheque/current account Fixed deposit account—credit and debit account, etc. 	6 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 94–101 Page 72–74
Data handling	Inflation	<ul style="list-style-type: none"> Calculations Rate of increase or decrease 	4 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 102–105 Page 75–81
	Collect, organise classify, display and summarise data sets	<ul style="list-style-type: none"> Data collection: <ul style="list-style-type: none"> Developing questions Populations and samples Data collection methods and instruments Classify and organise data: <ul style="list-style-type: none"> Tallies and frequency tables Displaying data: <ul style="list-style-type: none"> Pie charts, histograms, bar graphs Multiple bar graphs Line and broken line graph Scatter plots 	3 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 214–219 Page 144–146
			<ul style="list-style-type: none"> Summarising data: <ul style="list-style-type: none"> Mean Median Mode Range Analyse data represented by these averages *3 	7 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG
				<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 232–239 Page 151–152
				<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 226–231 Page 149–150 & 153–154

Term 3

REVISED DBE ANNUAL TEACHING PLAN				NAVIGATION PLAN	
THEMES/TOPIC	TOPIC/UNIT	UNIT/CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PLATINUM SERIES AND PEARSON NAVIGATION PACK	PAGE REFERENCE
Reflection and re-teaching			4 hours	Navigation Pack: Targeted worksheet	
Finance	Taxation	<ul style="list-style-type: none"> VAT and UIF Use till slips and other relevant documents as some of the resources for VAT Revise taxation learnt in G10 	3,75 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 186–191 Page 126–128
Maps, scale and representations	Scale	<ul style="list-style-type: none"> Scales (given/ own scale) number scales bar scales 	7 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 126–129 Page 93–94
	Maps	<ul style="list-style-type: none"> Maps (directions and point locations): elevation maps strip charts 	7 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 130–137 Page 95–96
Finance	Plans	<ul style="list-style-type: none"> Building plans: elevation plans design drawings 	7,5 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 174–177 Page 118–121
	Tariff system	<ul style="list-style-type: none"> Municipal tariffs: telephone tariffs transport tariffs Compare two tariff systems Bank fees Compare two options performing calculations drawing and interpreting graphs 	7 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 52–57 Page 46–47
	Simple events	<ul style="list-style-type: none"> Simple events Outcome, event and probability scale (revision) Relative frequency Theoretical probability 	1,5 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 192–195 Page 130–131
Probability	Compound events	<ul style="list-style-type: none"> Compound events Tree diagrams Two-way tables 	2,5 hours	<ul style="list-style-type: none"> Platinum LB Platinum TG 	<ul style="list-style-type: none"> Page 196–199 Page 132–134

REVISED DBE ANNUAL TEACHING PLAN			NAVIGATION PLAN		
THEMES/TOPIC	TOPIC/UNIT	UNIT/CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PLATINUM SERIES AND PEARSON NAVIGATION PACK	PAGE REFERENCE
ASSESSMENTS		Term 3 test: (1 hour) 50 marks		Navigation Pack: Investigation Exemplar Term 3 Test Exemplar	
 TOTAL HOURS = 40,25					

Term 4

REVISED DBE ANNUAL TEACHING PLAN			NAVIGATION PLAN		
THEMES/TOPIC	TOPIC/UNIT	UNIT/CONTENT SPECIFIC CONCEPTS	TIME	LINKS TO PLATINUM SERIES AND PEARSON NAVIGATION PACK	PAGE REFERENCE
Finance	Finance	<ul style="list-style-type: none"> • Cost price and selling price • Percentage profit 	8 hours	<ul style="list-style-type: none"> • Platinum LB • Platinum TG 	<ul style="list-style-type: none"> • Page 66–73 • Page 51–57
		<ul style="list-style-type: none"> • Inflation 	4 hours	<ul style="list-style-type: none"> • Platinum LB • Platinum TG 	<ul style="list-style-type: none"> • Page 102–105 • Page 75
Maps and plans	Models	<ul style="list-style-type: none"> • Exchange rates 	3,5 hours	<ul style="list-style-type: none"> • Platinum LB • Platinum TG 	<ul style="list-style-type: none"> • Page 210–213 • Page 142
		<ul style="list-style-type: none"> • Break-even analysis (personal and business finance) 	8 hours	<ul style="list-style-type: none"> • Platinum LB • Platinum TG 	<ul style="list-style-type: none"> • Page 70–77 • Page 53
		<ul style="list-style-type: none"> • Models <ul style="list-style-type: none"> • Follow instructions, e.g. <ul style="list-style-type: none"> • Plugs • Plastic models • Unassembled wooden furniture • Cell phones • Electrical appliances • Children's toys • Models <ul style="list-style-type: none"> • Packaging 	4 hours	<ul style="list-style-type: none"> • Platinum LB • Platinum TG 	<ul style="list-style-type: none"> • Page 178–179
ASSESSMENTS		Final examinations: All topics Paper 1: Finance, Data Handling and Probability Paper 2: Maps and Plans, Measurement and Probability	Paper 1: 2 Hours 100 marks	<ul style="list-style-type: none"> • Platinum LB • Platinum TG Navigation Pack: Exam Paper 1 Exemplar Exam Paper 2 Exemplar	<ul style="list-style-type: none"> • Page 180–183 • Page 122–123
			Paper 2: 2 Hours 100 marks		
			TOTAL HOURS = 27,5		

Targeted Worksheets

Targeted Worksheet 1

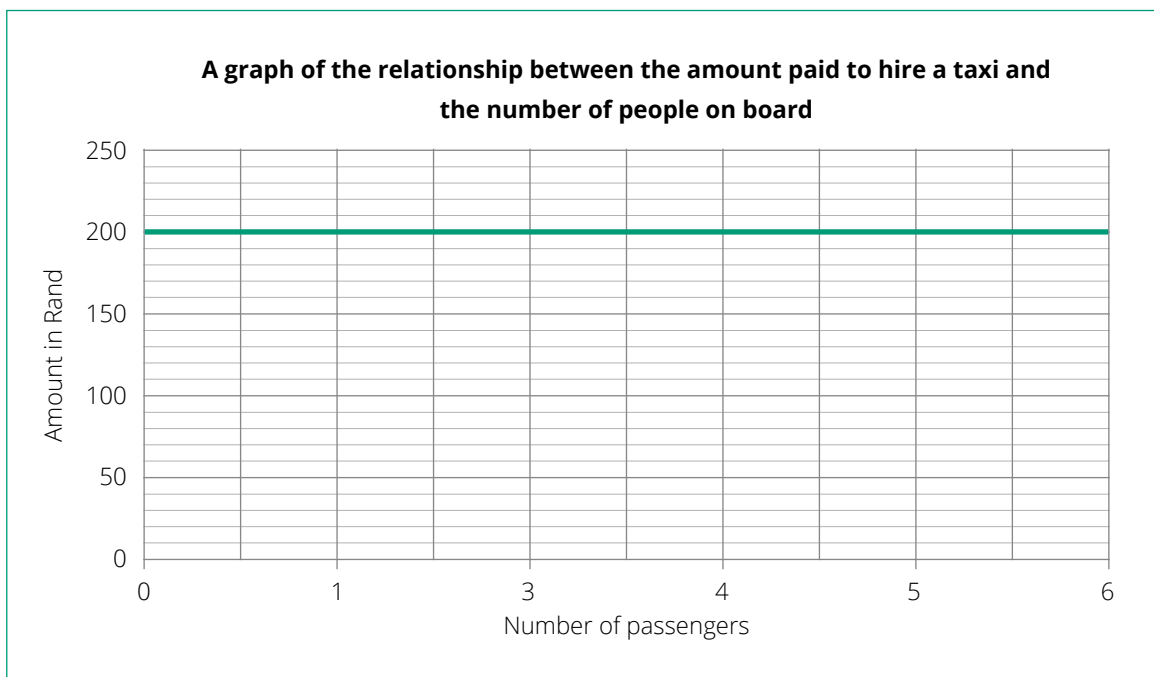
TARGETED WORKSHEET	TOPIC IN CAPS
1	Patterns and relationships
2	Measurement
3	Probability

Topic: Patterns and relationships

Content summary

- Constant relationship
 - One quantity in the relationship changes but the other remains the same.

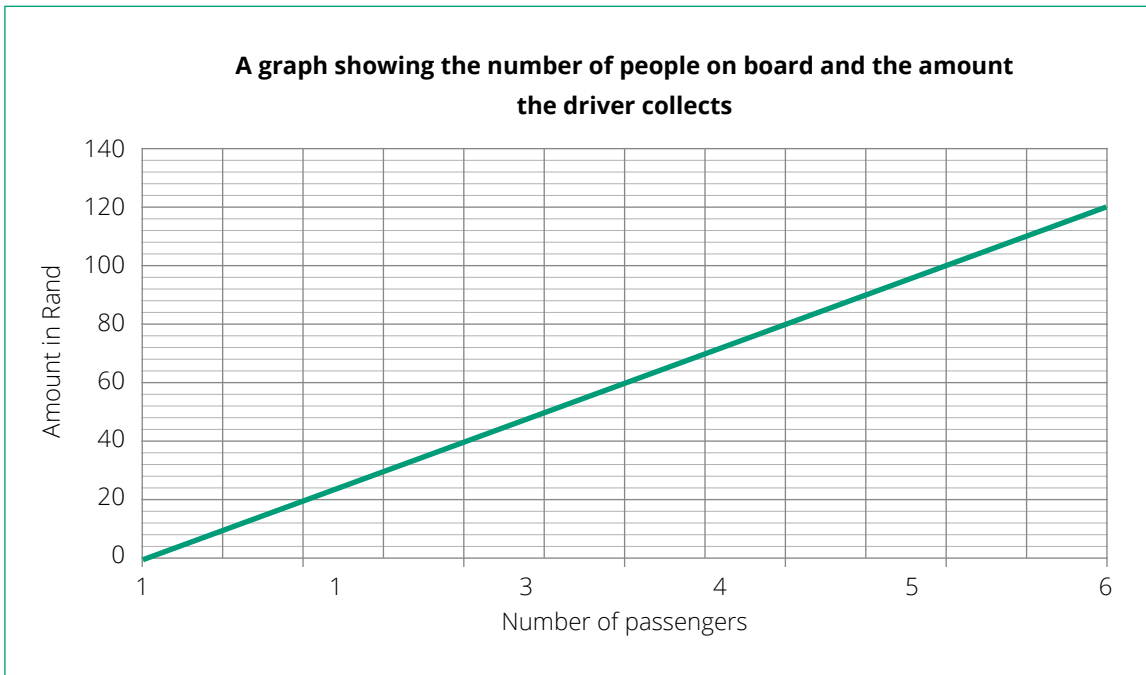
Number of passengers	1	2	3	4	5	6
Cost of hiring (R)	200	200	200	200	200	200



- Direct relationship
 - In this type of relationship, an increase in one quantity causes an increase in the other quantity, or a decrease in one quantity causes a decrease in the other quantity in the same ratio.
 - This type of relationship involves a common difference between consecutive quantities.

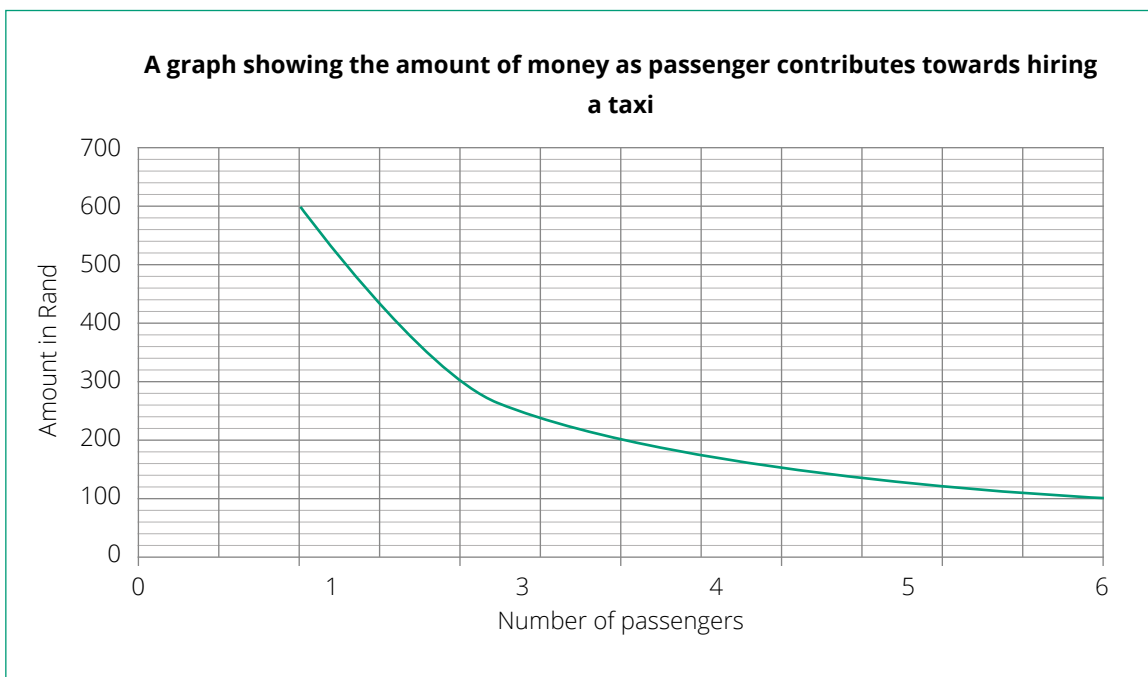
Number of passengers	1	2	3	4	5	6
Amount collected (R)	20	40	60	80	100	120

Targeted Worksheet 1



- Indirect (inverse) relationship
 - In this type of relationship, an increase in one quantity results in a decrease in the other quantity in the same ratio.
- Worked example: Let us consider a car hired for R600. The amount an individual passenger contributes towards hiring the car decreases as the number of people contributing increases. There is a common ratio as they share the cost equally.

Number of passengers	1	2	3	4	5	6
Amount a passenger pays (R)	600	300	200	150	120	100



Targeted Worksheet 1

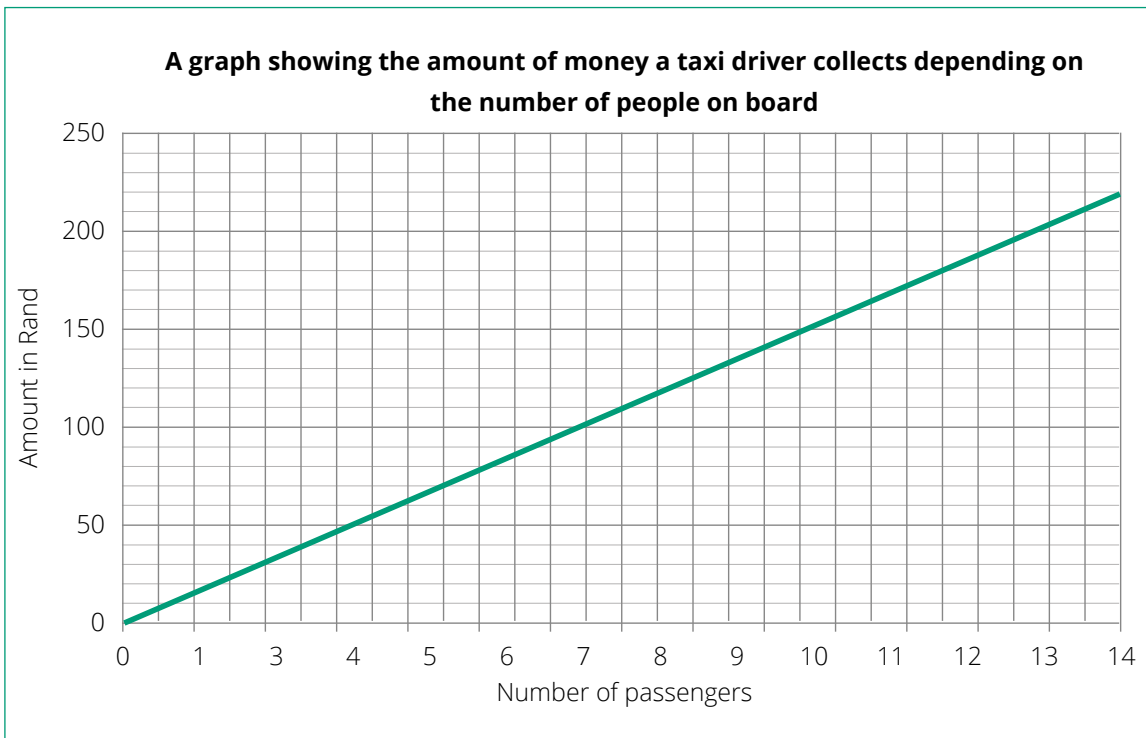
Topic: Patterns and relationships

Name: _____

Surname: _____

Question 1

A taxi driver working on a route in Soweto uses the following graph to determine the amount of money he collects from the passengers on board. Use the graph to answer the following questions.

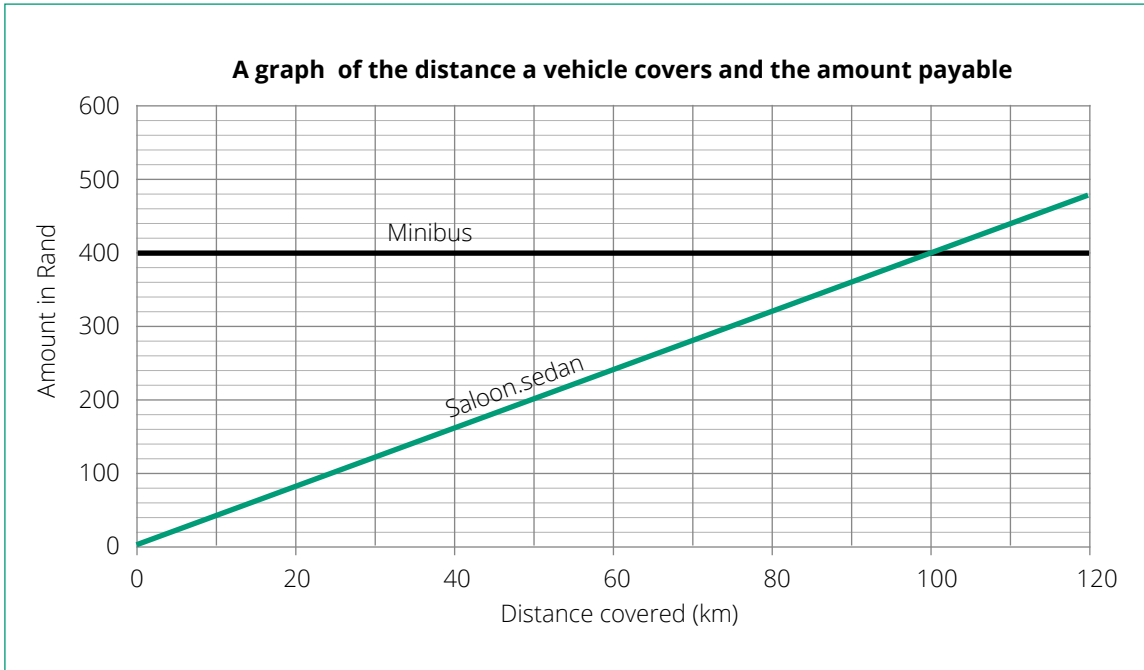


- 1.1 According to the graph, what is the maximum number of passengers he can transport? (2)
 - 1.2 What is the maximum amount he can collect? (1)
 - 1.3 Use the graph to determine the amount he charges a single passenger. (2)
- [5]

Targeted Worksheet 1

Question 2

The following graph shows the tariff a car rental company uses to charge its clients. Study the graph and answer the following questions.

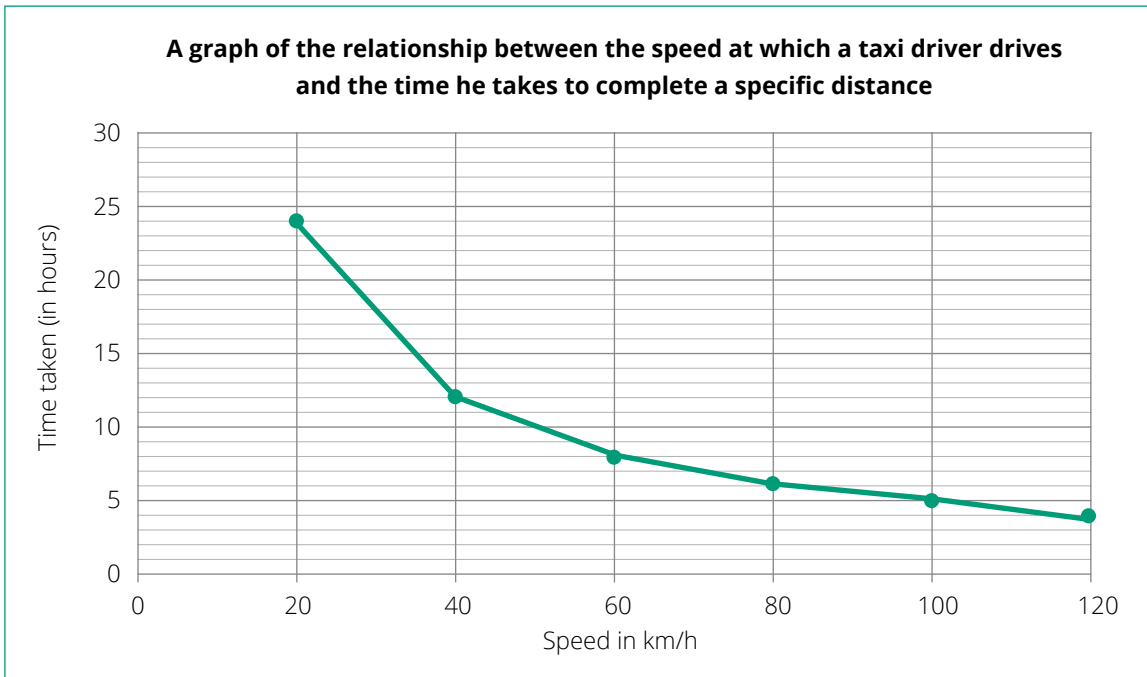


- 2.1 Describe the relationship between the distance covered and the amount one pays for:
 - 2.1.1 a minibus (2)
 - 2.1.2 a saloon or sedan. (2)
 - 2.2 Determine the cost per kilometre if you are using a sedan or saloon car.
 - 2.3 Describe the relationship between the cost of hiring a saloon car and the distance in kilometres, in the form:
 - For every kilometre covered using a saloon car, you pay... (1)
 - 2.4 Write the formula that you would use to calculate the amount you pay for using a saloon or sedan car. (2)
- [7]

Targeted Worksheet 1

Question 3

A long-distance taxi driver looks at the time he takes to cover a certain distance. He uses the following graph to work out the time. Study the graph and use it to answer the following questions.



- 3.1 Describe the relationship between the speed the taxi driver drives at, and the time taken. (2)
- 3.2 Name the type of relationship displayed by the graph. (1)
- 3.3 What is the distance the taxi driver covered?
Distance = Speed × Time (2)
- 3.4 If the taxi driver drives at 50 km/h, estimate how long it will take him to complete the trip. (2)
- [7]

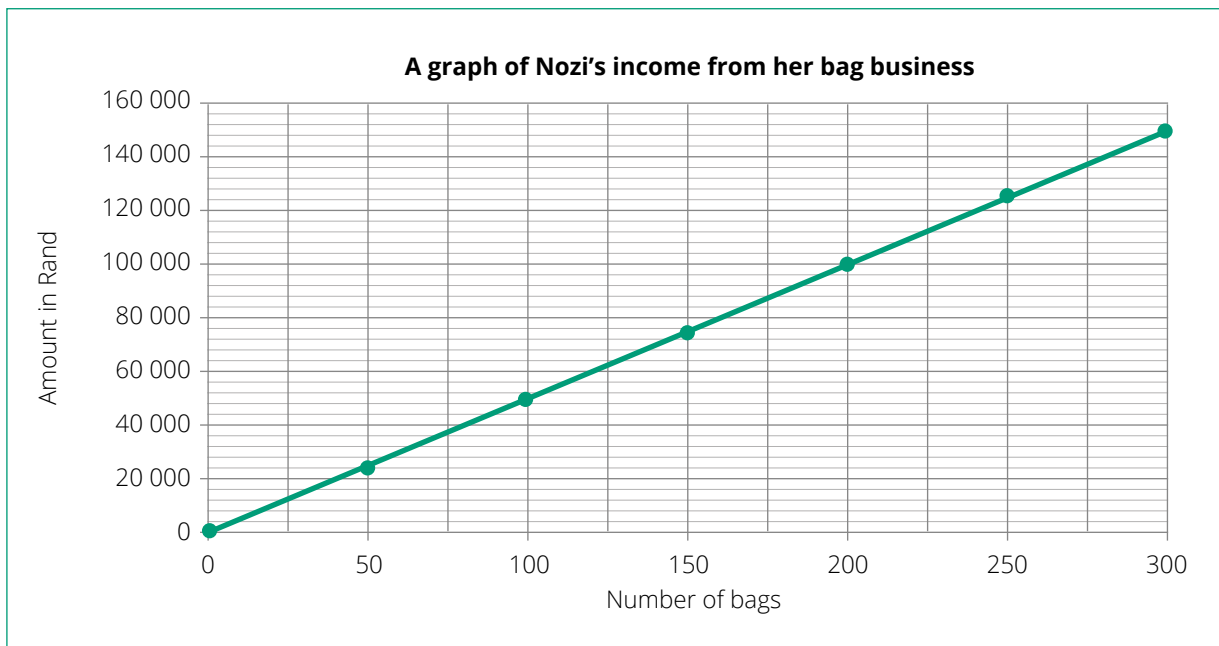
Targeted Worksheet 1

Question 4

Nozi buys and sells bags. She buys the bags from a mall and sells them at a higher price. The table below shows her expected income and expenses. Study the table and answer the questions that follow.

Number of bags	0	50	100		250	300
Total costs (R)	10 000	25 000	40 000	70 000	B	100 000
Income (R)	0	A	50 000	0	000	0

- 4.1 Determine Nozi’s fixed costs. (2)
- 4.2 How much does she pay for a single bag? (3)
- 4.3 What is the selling price for a bag? (2)
- 4.4 Write down a formula that she can use to calculate her:
 - 4.4.1 total costs (2)
 - 4.4.2 income. (2)
- 4.5 The graph for her income has been drawn on the grid shown below.



- 4.5.1 Use the same grid to draw the graph for her total costs (5)
- 4.5.2 Use the graphs, or otherwise, to determine the values of A and B in the table. (4)
- 4.6 How much money must Nozi spend for her business to break even? (2)

[22]

TOTAL: 41

Targeted Worksheet 2

Topic: Measurement

Content summary

- Estimating measurements
 - In many of our homes, we do not have the right equipment to measure the different items we use in our households.
 - We do not usually have a lot of time to measure accurately.
 - We estimate our normal food chemicals, like salt and sugar, using spoons and cups.
 - We estimate our washing chemicals using simple equipment like spoons and cups.
 - We estimate distances by observation.
 - We estimate weight by lifting items.
 - We estimate temperature by touching and feeling.
- Calculating measurements using formulae
 - Perimeter
 - Area
 - Volume

Targeted Worksheet 2

Topic: Measurement

Name:

Surname:

Question 1

Nomusa likes baking. She uses spoons and cups to measure her ingredients. She estimates her measurements using some household utensils. The estimated sizes of her utensils are indicated below.

1 teaspoon = 5 ml	1 tablespoon = 15 ml	1 teacup = 250 ml	1 bottle = 1 litre
1 flat teaspoon = 5 g	1 flat tablespoon = 15 g	1 mug = 500 g	

Nomusa uses the following ingredients to make muffins.

- 3 mugs flour
- $\frac{3}{4}$ mug sugar
- 2 flat teaspoons baking powder
- pinch salt
- 120 g butter
- 2 large eggs
- $\frac{3}{4}$ teacup milk

Nomusa mixes the ingredients well and pours the mixture into a muffin tray. She bakes the muffins at a temperature of 180 °C for 24 minutes. The recipe makes 24 muffins.

- 1.1 If she wants to make 150 muffins, how much flour does she need? (2)
- 1.2 How much milk (in litres) does she need to make 24 muffins? (2)
- 1.3 How many grams of baking powder does she need to make 32 muffins? (4)
- 1.4 Convert the baking temperature to Fahrenheit using the formula:
- $^{\circ}\text{F} = ^{\circ}\text{C} \times 1,8 + 32^{\circ}$
- (2)
- 1.5 Nomusa's muffins did not come out properly. She was told that the temperature she had set the oven on was too high. She had set it at 320 °F, which she thought was very close to the required baking temperature in her recipe book. Justify this claim. You may use the formula:
- $^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1$
- (2)
- 1.6 How many hours are required for the baking process indicated in the recipe? (2)

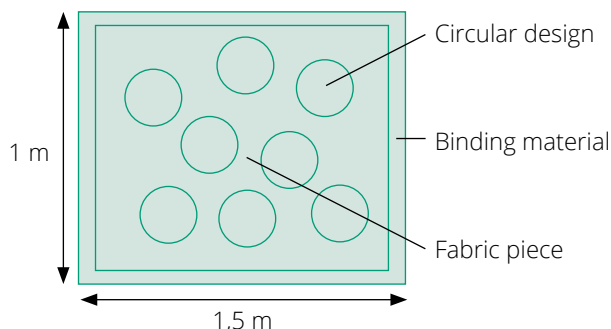
[14]

Targeted Worksheet 2

Question 2

Penny specializes in making tablecloths. She buys fabric in rolls. The length of each roll is 100 m and the standard width is 1 m. She cuts the roll into pieces of 1,5 m in length and then puts binding material at the edge of each tablecloth.

A packet of binding material contains 24 pieces, each 5 cm long. Each tablecloth has 8 circular designs. Each circular design piece has a diameter of 14 cm.



- 2.1 How many tablecloths can she make from 1 roll of fabric? (2)
- 2.2 After decorating the tablecloths with circles and binding material, she sells them at the community crafts shop. (2)
 - 2.2.1 Determine the perimeter of one tablecloth. (2)
 - 2.2.2 How many pieces of binding material are required for one tablecloth? (3)
 - 2.2.3 Determine the number of pieces of binding material required for 1 roll of fabric. (2)
- 2.3 Calculate the area of the tablecloth that is not covered with the circular designs. (4)

Area of a circle = $\pi \times \text{radius}^2$

[13]

Question 3

Amanda mixes fruit concentrate with water in the ratio 1 : 7 to make 8 litres of drinkable juice. She uses a cylindrical drum with diameter 60 cm and fills it to a height of 89 cm. She then pours the juice in 0,5-litre bottles and sells it to a school tuck shop.

- 3.1 Determine the volume of drinkable juice that can be contained in the drum. (3)

Volume of a cylinder = $\pi \times \text{radius}^2 \times \text{height}$
- 3.2 How many litres of fruit concentrate does she need in order to make a drum of drinkable juice? (3)
- 3.3 How many bottles can she fill up with drinkable juice from 1 drum? (2)
- 3.4 Amanda plans to expand her sales to other school tuck shops. She analyses the total sales from 6 other tuck shops and works out the possibility of taking over the markets. Her observations are as follows.

Tuck shop	1	2	3	4	5	6
Amanda's juice	13	17	33	12	11	21
Other juices	22	14	20	11	11	17

What is the probability that she will take over the market for the 6 schools? (4)

[12]

TOTAL: 39

Targeted Worksheet 3

Topic: Probability

Content summary

- Mathematical probability (also called prediction)
 - Probability is the possibility that something will occur.
 - $\text{Probability} = \frac{\text{Number of changes for an event to occur}}{\text{Total number of all possible results}}$
- Anything that can occur is called an event.
- The result of an event taking place is called an outcome.
- All events occur by chance to give specific outcomes.
- $\text{Experimental probability or relative frequency} = \frac{\text{Number of successes}}{\text{Total number of all trials}}$
- Probability of single events is called simple probability.
- Combined events may be dependent or independent.
- An event is said to be independent if its occurrence is not affected by another event.

Targeted Worksheet 3

Topic: Probability

Name:

Surname:

Question 1

- 1.1 A class has 14 boys and 16 girls. What is the probability of choosing a boy from the class? (2)
- 1.2 Peter is planning to run in a marathon. What is the probability that he will move his left leg first? (2)
- 1.3 Mandisa has 15 apples and 13 avocado pears.
- 1.3.1 What is the probability that she will pick an apple? (2)
- 1.3.2 What is the probability that she will not pick an apple? (2)
- 1.4 A tailor has 4 green buttons, 3 blue buttons and 7 red buttons. What is the probability that she will:
- 1.4.1 pick a blue button (2)
- 1.4.2 not pick a green button (2)
- 1.4.3 pick a green or a blue button (3)
- [15]

Question 2

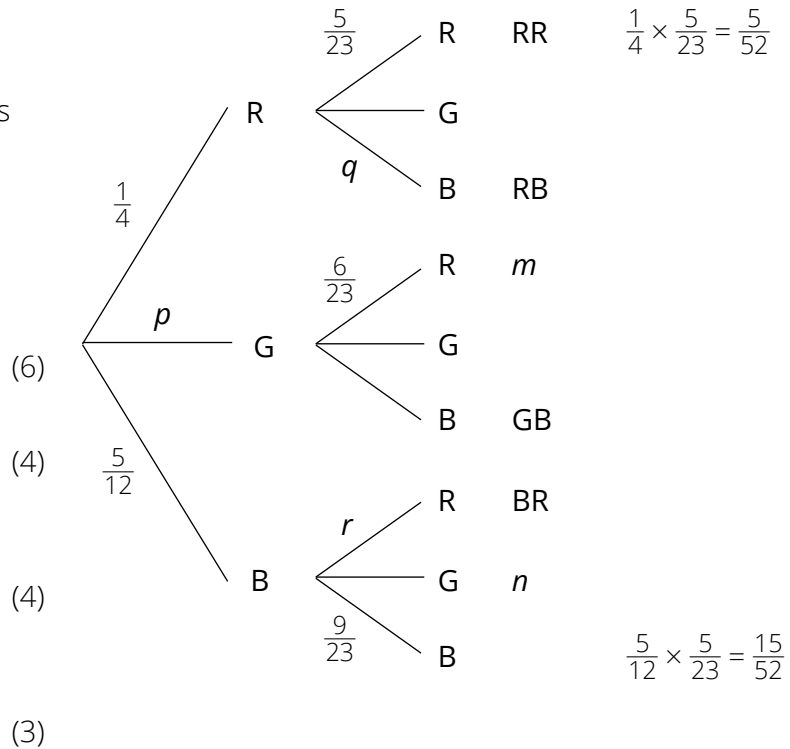
The traffic cops stopped 520 vehicles on a busy road. They were checking for vehicles that did not meet the requirements for road safety.

- 320 vehicles were faultless.
 - 17 vehicles had drivers driving under the influence of alcohol.
 - 32 drivers were driving without a licence.
 - 19 vehicles had worn-out tyres.
 - 7 vehicles had cracked windscreens.
 - 70 vehicles did not have licence discs.
 - The rest of the cars had a combination of faults.
- 2.1 How many cars had a combination of faults? (2)
- 2.2 What is the relative frequency of vehicles with a combination of faults? (2)
- 2.3 What is the likelihood of finding a car among those stopped, without any fault? (2)
- 2.4 What is the probability of finding a driver at fault? (3)
- 2.5 Represent the information about the vehicles on a probability scale. (8)
- [17]

Targeted Worksheet 3

Question 3

Zinhle has 24 buttons in her bag. 10 buttons are blue(B), 6 are red(R) and the rest are green(G). She selects 2 buttons from the bag without replacing them. The incomplete tree diagram showing the possible outcomes is shown below.



- 3.1 Determine the probabilities p , q and r .
- 3.2 Determine the outcomes m and n .
- 3.3 What is the probability that she will pick buttons of the same colour?
- 3.4 What is the probability that she will pick one red button and one blue button?

[17]

Question 4

A doctor specialises in three types of ailments. He deals with headaches (H), body pains (B) and simple fractures (F). Just before the day ends, he calls in his last two patients. The doctor's expectations before the patients enter are shown in the following two-way table.

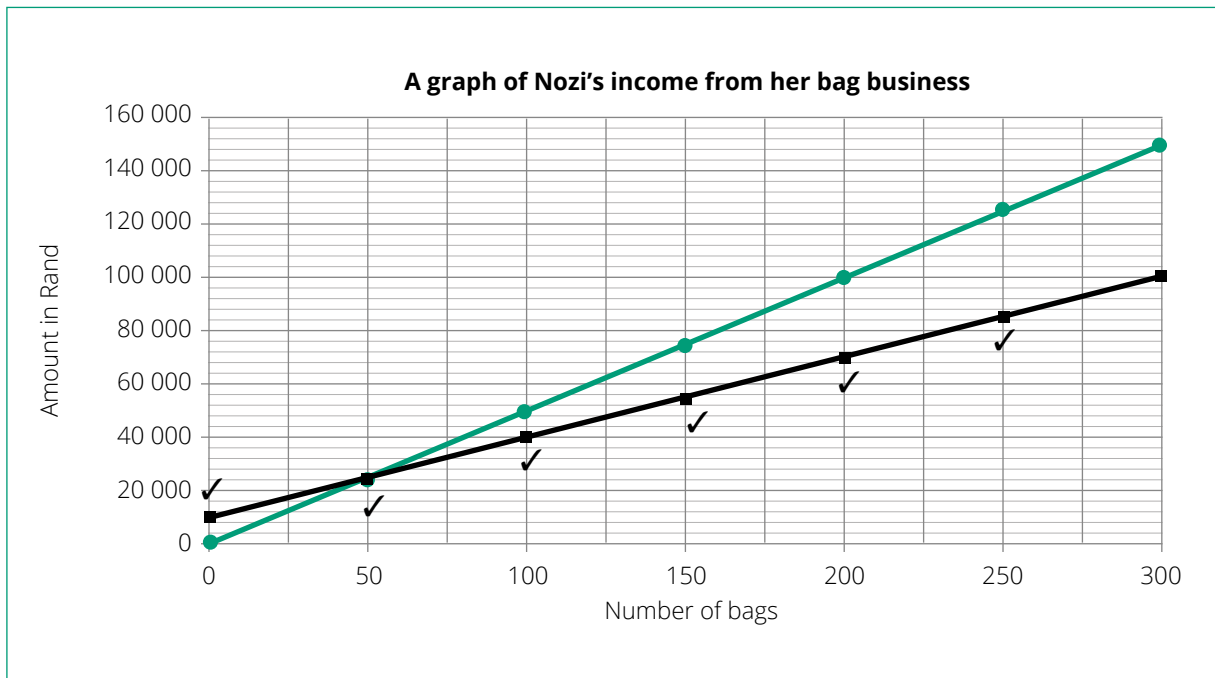
		PATIENT 2		
		H	B	F
PATIENT 1	H	HH		
	B			
	F			

- 4.1 Copy and complete the table to show the doctor's expectations from the two patients. (4)
- 4.2 What is the probability that the two patients would have the same health problem? (2)
- 4.3 The doctor claims that it is very unlikely that any two randomly selected patients will have the same health problem. Justify this claim using relevant calculations. (3)

[9]

TOTAL: 58

Targeted Worksheet 1 Answers



4.5.1 Vertical axis intercept ✓

Break-even point ✓

Straight line ✓

Any two points ✓✓

(5)

4.5.2 Reading from the graph:

A = R25 000 ✓✓

B = R85 000 ✓✓

(4)

OR Using the equations:

Income = R500 × Number of bags

A = R500 × 50 bags = R25 000 ✓✓

Total costs = R10 000 + R300 × Number of bags

B = R10 000 + R300 × R250 = R85 000 ✓✓

(4)

4.6 R25 000 ✓✓

(2)

[22]

TOTAL : 41

Targeted Worksheet 2 Answers

Question 1

- 1.1 24 muffins require 3 mugs flour
 1 muffin requires $\frac{3}{24}$ mug
 150 muffins require $\frac{3}{24} \times 150$ ✓ mug
 = $18\frac{3}{4}$ mugs ✓ (2)
- 1.2 1 teacup = 250 ml
 $\frac{3}{4}$ teacup = $\frac{3}{4} \times 250$ ml = 187,5 ml ✓
 \therefore 24 muffins require 187,5 ml ✓ (2)
- 1.3 2 flat teaspoons 2×5 g = 10 g ✓
 \therefore 24 muffins require 10 g baking powder
 \therefore 1 muffin requires $\frac{10}{24}$ baking powder ✓
 \therefore 32 muffins require $\frac{10}{24} \times 32$ baking powder ✓
 = 13,33 g baking powder ✓ (4)
- 1.4 $^{\circ}\text{F} = ^{\circ}\text{C} \times 1,8 + 32^{\circ}$
 = $180 \times 1,8 + 32^{\circ}$ ✓
 = 356 $^{\circ}\text{F}$ ✓ (2)
- 1.5 $^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1,8$
 = $(320^{\circ}\text{F} - 32^{\circ}) \div 1,8$ ✓
 = 160 $^{\circ}\text{C}$ ✓ (2)
 The temperature was too low compared with the required temperature (180 $^{\circ}\text{C}$). ✓ (3)
- 1.6 24 minutes = $24 \div 60$ ✓ hours
 = 0,4 hours ✓ (2)

[14]

Question 2

- 2.1 Number of tablecloths = $100 \text{ m} \div 1,5 \text{ m}$ ✓
 = 66 tablecloths ✓ (2)
- 2.2.1 Perimeter = $(1,5\text{m} + 1 \text{ m}) \times 2$ ✓
 = 5 m ✓ (2)
- 2.2.2 Each piece of binding material = $5 \text{ cm} \div 100 = 0,05 \text{ m}$ ✓
 Number of pieces of binding material required for one tablecloth = Perimeter $\div 0,05$
 = $5 \text{ m} \div 0,05$ ✓
 = 100 pieces ✓ (3)
- 2.2.3 Number of pieces required for 1 roll = 100×66 pieces ✓
 = 6 600 pieces ✓ (2)

Targeted Worksheet 2 Answers

- 2.3 Area of tablecloth = $1,5 \text{ m} \times 1 \text{ m}$
 $= 1,5 \text{ m}^2 \checkmark$
 Radius of circular piece = $7 \text{ cm} \div 100 = 0,07 \text{ m} \checkmark$
 Area of circular pieces = $3,142 \times 0,07^2 \times 8 \text{ pieces} = 0,1231664 \text{ m}^2 \checkmark$
 Area not covered by circular pieces = $1,5 - 0,1231664 = 1,38 \text{ m}^2 \checkmark$ (4)
 [13]

Question 3

- 3.1 Volume = $\pi \times \text{radius}^2 \times \text{height}$
 $= 3,142 \times 30^2 \times 89 \checkmark \checkmark$
 $= 251\,674,2 \text{ cm}^3 \checkmark$ (3)
- 3.2 Volume of concentrate = $\frac{1 \text{ part}}{8 \text{ parts}} \times 251\,674,2 \text{ cm}^3$
 $= 31\,459,275 \text{ cm}^3 \checkmark$
 $= 31\,459,275 \div 1\,000 \checkmark$
 $= 31,46 \text{ litres} \checkmark$ (3)
- 3.3 Number of 0,5-litre bottles in one drum = $251,67 \div 0,5 \text{ litre}$
 $= 503 \text{ bottles} \checkmark$ (2)
- 3.4 Amanda's sales = $13 + 17 + 33 + 12 + 11 + 21$
 $= 107 \text{ bottles} \checkmark$
 Total sales = $22 + 14 + 20 + 11 + 11 + 17 + 107$
 $= 202 \text{ bottles} \checkmark$
 $P(\text{Amanda selling}) = \frac{107}{202} \checkmark$
 $= 53\% \checkmark$ (4)
 [12]

TOTAL: 39

Targeted Worksheet 3 Answers

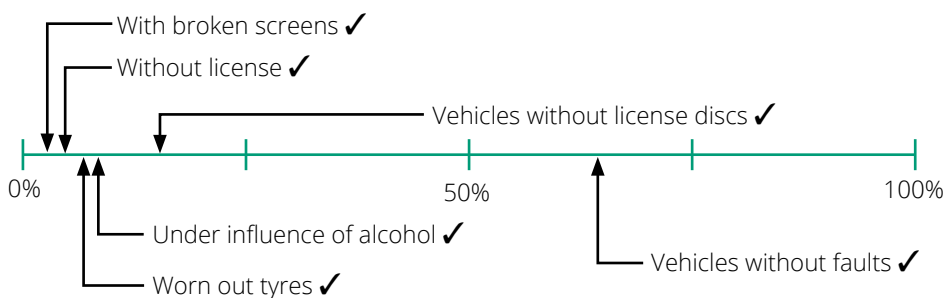
Question 1

- 1.1 $P(\text{boy}) = \frac{14}{30} = \frac{7}{15}$ ✓✓ (2)
- 1.2 $P(\text{left leg first}) = \frac{1}{2}$ ✓✓ (2)
- 1.3.1 $P(\text{Apple}) = \frac{15}{28}$ ✓✓ (2)
- 1.3.2 $P(\text{not picking an apple}) = P(\text{picking Avocado})$
 $= \frac{13}{28}$ ✓✓ (2)
- 1.4.1 Total number of buttons = $4 + 3 + 7 = 14$ ✓
 $P(\text{blue}) = \frac{3}{14}$ ✓ (2)
- 1.4.2 $P(\text{not picking green}) = P(\text{blue}) + P(\text{red})$
 $= \frac{3}{14} + \frac{7}{14}$ ✓
 $= \frac{10}{14} = \frac{5}{7}$ ✓ (2)
- 1.4.3 $P(\text{green or blue}) = P(\text{green}) + P(\text{blue})$
 $= \frac{4}{14} + \frac{3}{14}$ ✓
 $= \frac{7}{14} = \frac{1}{2}$ ✓✓ (3)
- [15]

Question 2

- 2.1 Cars with a combination of faults = $520 - (70 + 7 + 19 + 32 + 17 + 320)$
 $= 55$ vehicles ✓✓ (2)
- 2.2 Relative frequency of cars with a combination of faults = $\frac{55}{520}$ ✓
 $= \frac{11}{104}$ ✓ (2)
- 2.3 Likelihood of a car without a fault = $\frac{320}{520} = \frac{8}{13}$ ✓ (2)
- 2.4 $P(\text{driver at fault}) = P(\text{no license}) + P(\text{no license disc}) + P(\text{under influence of alcohol})$
 $= \frac{32}{520} + \frac{70}{520} + \frac{17}{520}$ ✓✓
 $= \frac{119}{520}$ ✓ (3)
- 2.5 Percentage of cars without faults = $\frac{320}{520} \times 100\% = 61,54\%$ ✓
 Percentage of drivers under the influence of alcohol = $\frac{17}{520} \times 100\% = 3,31\%$ ✓
 Percentage of drivers without licenses = $\frac{32}{520} \times 100\% = 6,15\%$ ✓
 Percentage of vehicles with worn out tyres = $\frac{19}{520} \times 100\% = 3,65\%$ ✓
 Percentage of drivers with cars with broken screens = $\frac{7}{520} \times 100\% = 1,34\%$ ✓
 Percentage of drivers without license discs = $\frac{70}{520} \times 100\% = 13,46\%$ ✓

(Any one) (1)



(7)

[17]

Targeted Worksheet 3 Answers

Question 3

3.1 $p = \frac{8}{24} = \frac{1}{3} \checkmark\checkmark$ $q = \frac{10}{23} \checkmark\checkmark$ $r = \frac{6}{23} \checkmark\checkmark$ (6)

3.2 $m = GR \checkmark\checkmark$ $n = BG \checkmark\checkmark$ (4)

3.3 P(buttons of the same colour) = P(BB) + P(GG) + P(RR)

$P(BB) = \frac{5}{12} \times \frac{9}{23} = \frac{15}{92} \checkmark$

$P(GG) = \frac{1}{3} \times \frac{7}{23} = \frac{7}{69} \checkmark$

$P(RR) = \frac{1}{4} \times \frac{5}{23} = \frac{5}{92} \checkmark$

P(buttons of the same colour) = $\frac{15}{92} + \frac{7}{69} + \frac{5}{92} = \frac{22}{69} \checkmark$ (4)

3.4 P(red and blue) = P(RB) + P(BR)

$P(RB) = \frac{1}{4} \times \frac{10}{23} = \frac{5}{46} \checkmark$

$P(BR) = \frac{5}{12} \times \frac{6}{23} = \frac{5}{46} \checkmark$

P(red and blue) = $\frac{5}{46} + \frac{5}{46} = \frac{5}{23} \checkmark$ (3)

[17]

Question 4

4.1

		PATIENT 2		
		H	B	F
PATIENT 1	H	HH	HB✓	HF✓
	B	BH✓	BB✓	BF✓
	F	FH✓	FB✓	FF✓

Any four (4 marks) (4)

4.2 P(Same) = P(HH) + P(BB) + P(FF)

$= \frac{3}{9} \checkmark$

$= \frac{1}{3} \checkmark$ (2)

4.3 $\frac{1}{3} \times 100\% = 33,33\% \checkmark$

33,33%. There is a 33.33% chance that the two patients will have the same health problem. Therefore the patients are unlikely ✓ to have the same health problem.

The doctor is right. ✓ (3)

[9]

TOTAL: 58

Assignments

Assignment 1

Duration: 1 hour Total marks: 50

Assignment 1

Instructions

1. Number your work according to the numbering system used in the question paper.
2. Show all calculations to be able to earn more marks.
3. Write all your answers in ink. Leave a line before writing a solution to the next question.
4. Round off the final answers appropriately according to the context, unless otherwise stated.
5. Please use the following annexure and answer sheet:
 - ANNEXURE A for Question 2
 - ANSWER SHEET 1 for Question 1.3.3

Question 1

1.1 Phindi dilutes 100% fruit juice concentrate and sells it as drinkable juice to school children. The juice has no preservatives. Instead, she boils the juice at a temperature of 180 °C and cools it to 14 °F. The sticker on the fruit concentrate container indicates the following ingredients:

Fruit syrup	50 g/100 ml
Sugar	20 g/100 ml
Flavouring	2 g/100 ml

1.1.1 Convert 14 °F to Celsius.

Use the formula: $^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1,8$ (2)

1.1.2 How many grams of fruit syrup would she need for 5 litres of fruit concentrate? (3)

1.1.3 What is the ratio of fruit concentrate to water to make a drinkable juice? (2)

1.2 It takes 32,8 minutes to mix the ingredients perfectly. Write the time in minutes and seconds. (2)

1.3 Phindi investigates the cost of supplying different quantities of packaged juice to a nearby school. The following table shows the results of her investigation.

Number of packages	5	10	50	Q	200
Cost (R) per package	40	20	P	2	1

1.3.1 What type of relationship is displayed in the table above? (2)

1.3.2 Describe the relationship between the number of packages transported and the cost per package. (2)

1.3.3 Draw the graph of the relationship between the number of packages and the cost per package.
Use the grid on ANSWER SHEET 1 (4)

1.3.4 Use your graph, or otherwise, to determine the values of P and Q in the table. (4)

[21]

Assignment 1

Question 2

Muzi owns a bag shop. He rents his premises for R8 000 per month and spends R3 000 on water, electricity, security and refuse collection. He also pays his shop attendant R4 000. The graph in ANNEXURE A shows his monthly income and total costs for the numbers of bags sold during the month. Study the graph and answer the questions that follow.

- 2.1 What are Muzi's total fixed costs? (2)
- 2.2 Muzi spends R5 000 to buy 25 bags and he gets his income from the sales of the bags.
- 2.2.1 Write the formula he can use to calculate his:
- a) income (2)
- b) total costs. (2)
- 2.2.2 Use the graph, or otherwise, to determine:
- a) the number of bags he must sell to receive an income of R30 000 (2)
- b) how many bags he will have bought to make his total expenditure for the month R20 000 (2)
- c) the minimum number of bags he must sell to avoid a loss. (2)
- 2.3 Use the graph, or otherwise, to determine his profit or loss when he buys and sells 60 bags in a specific month. (3)
- 2.4 Muzi indicated that if he sold 150 bags in a particular month, his profit would be more than R25 000. Verify his claim using relevant calculations. (4)
- 2.5 Thomas, Muzi's helper, saves 15% of his monthly wage into a "stokvel account" with 13 other members. They are planning to buy a minibus taxi worth R320 000 in the next 4 years. They all save the same amount each month.
- 2.5.1 How much does Thomas save every month? (2)
- 2.6.1 Use relevant calculations to show whether they will be able to buy the minibus taxi or not. (3)
- 2.6.1 The minibus taxi can also be acquired by depositing 20% of the cash price and the remaining amount can be financed by the vehicle dealership, at an interest rate of 11% p.a. The entire loan must be paid off within 60 months. Determine the monthly repayment (5)

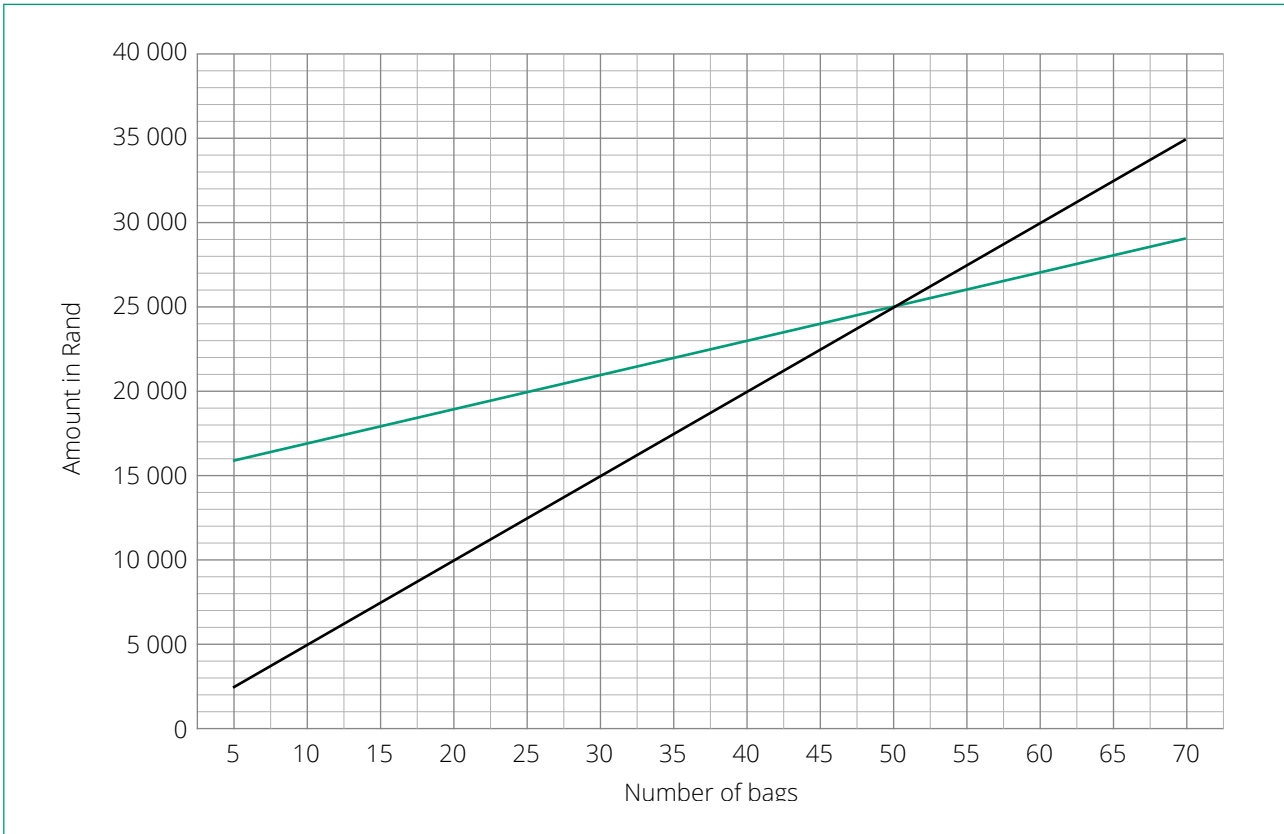
[29]

TOTAL: 50

Assignment 1

ANNEXURE A

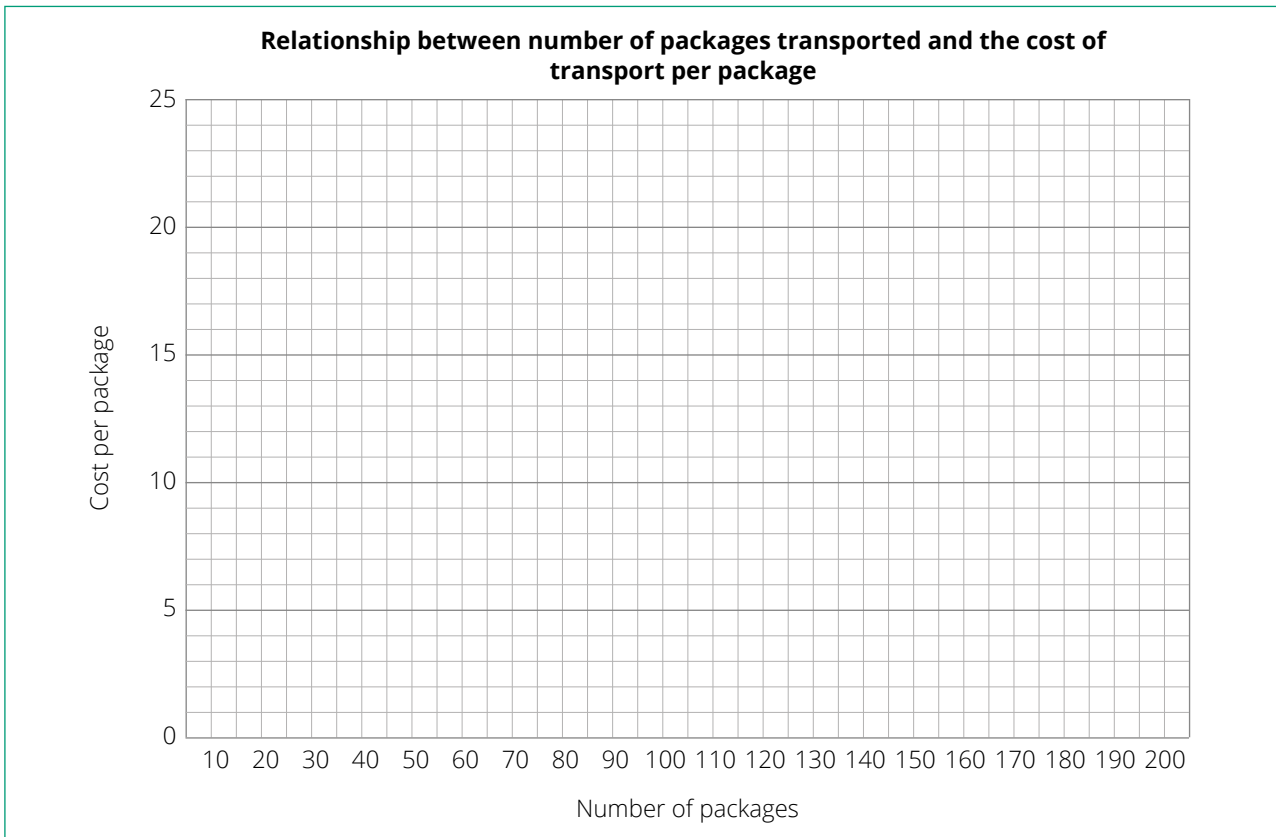
For Question 2



Assignment 1

ANSWER SHEET 1

For Question 1.3.3



Assignment 2

Duration: 1 hour Total marks: 50

Assignment 2

Instructions

1. Number your work according to the numbering system used in the question paper.
2. Show all calculations to be able to earn more marks.
3. Write all your answers in ink. Leave a line before writing a solution to the next question.
4. Round off the final answers appropriately according to the context, unless otherwise stated.

Question 1

Covid-19 has affected the lives of people in many ways. Some people have lost their jobs or businesses. Some have lost loved ones.

- 1.1 Before the Covid-19 pandemic, Jimmy had taken a loan of R15 000 at an interest rate of 12% compounded annually. The loan was to be paid back within 3 years, broken into monthly instalments.
- 1.1.1 Calculate the total amount Jimmy was supposed to pay back. (3)
- 1.1.2 How many instalments was he supposed to pay? (2)
- 1.1.3 The loan was meant to be paid in equal monthly instalments. Calculate the monthly instalment that Jimmy was supposed to pay. (2)
- 1.2 The prices of non-essential goods went down while the prices of essential goods and services went up.
- 1.2.1 Write down the term that refers to the general drop in prices of goods and services (1)
- 1.2.2 If the price of a 5-litre container of sanitiser is R189, what was the price before a 30% price hike, if sanitiser is classified as one of the essential goods? (2)
- 1.2.3 The price of petrol is said to have decreased from R14,89 to R12,99. By what percentage did the price of petrol decrease? (2)
- 1.2.4 A litre of petrol now costs R14,82 after a 7% increase. What was the cost before the increase? (2)
- 1.3 The number of Covid-19 infections were recorded for one month, in a number of hospitals in a city.
The records are shown in the following table. Study the table and answer the questions that follow.

12	16	22	19	31	34	51	43	45	32	41	33	33	42	21
41	16	44	51	32	44	34	32	38	41	38	19	32	31	48

- 1.3.1 Is the data continuous or discrete? (1)
- 1.3.2 What is the modal infection recorded in the hospitals? (2)
- 1.3.3 What is the average Covid-19 infection rate for the hospitals? (3)

Assignment 2

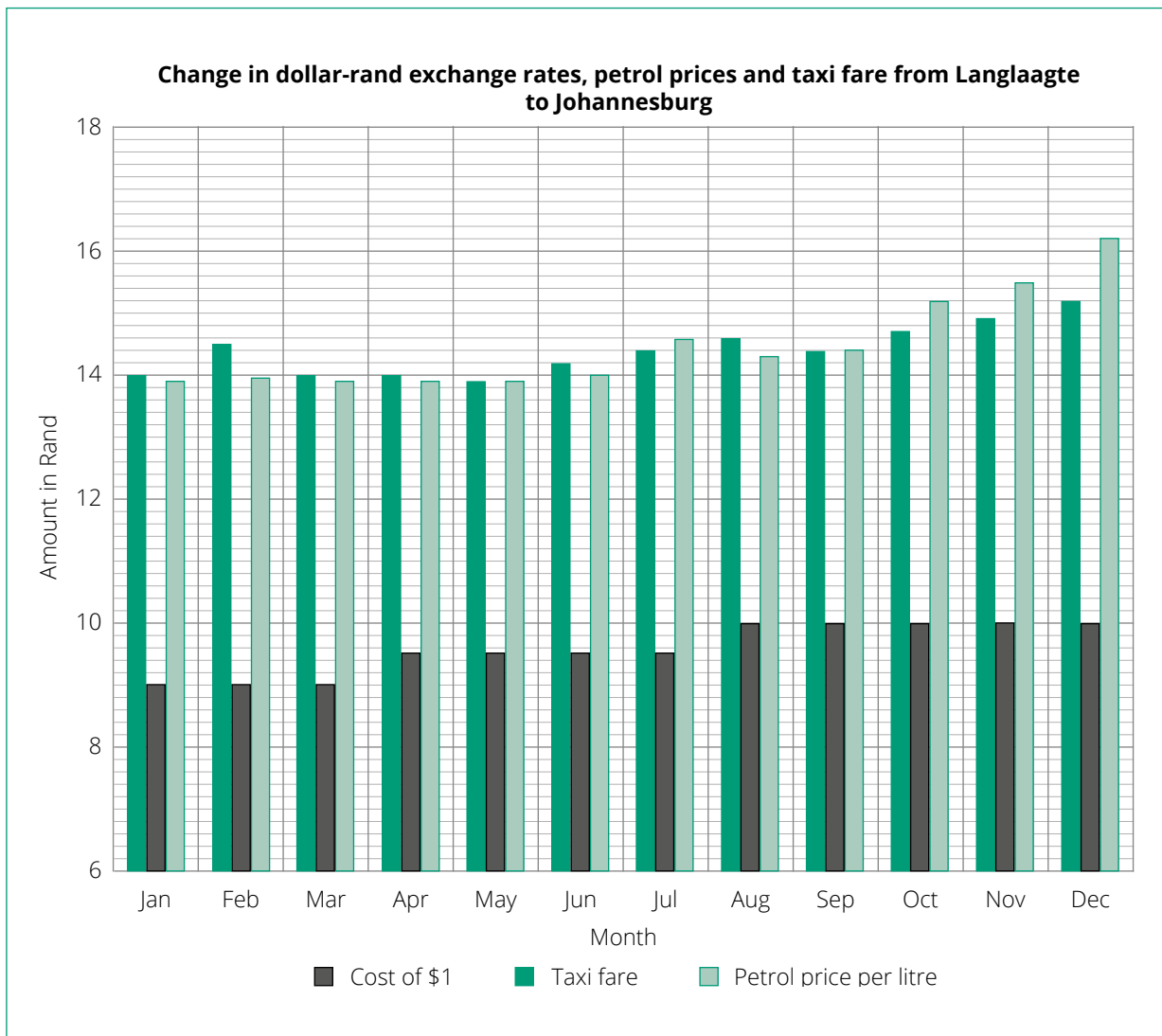
1.3.4 Determine the range of the data collected. (2)

1.3.5 The mayor of the city said that it was very likely that the daily infection will be more than 30 people. Justify his claim using relevant calculations. (3)

[25]

Question 2

Many people have been affected by the changing prices of petrol and transport fares. The taxi owners say that the rise in taxi fares is due to the increasing prices of petrol and the petrol pump operators say increases are due to the increase in the rand-dollar exchange rate. The following graph shows the changes in a month-on-month rand to dollar exchange rate, petrol prices and taxi fares. Study the graph and answer the questions that follow.



2.1 The taxi drivers complained that their taxis were filling up to 50% of the total number of passengers in a taxi due to the Covid-19 Government restrictions.

Assignment 2

- 2.1.1 Which of the three items in the consumer basket does not show inflation? (1)
- 2.1.2 If a taxi with the capacity to load 14 passengers had 8 passengers, would the driver be abiding by the Covid-19 rules? Explain your answer using relevant calculations. (3)
- 2.1.3 Calculate the average taxi fare during the year. (3)
- 2.2 Foreign trading requires the use of foreign currencies such as the dollar.
- 2.2.1 Which month would have been the most appropriate for an importer? Explain your answer. (2)
- 2.2.2 Determine the month-on-month inflation rate for December, using the rand/dollar exchange rate. (3)
- 2.2.3 Use the inflation rate for December to determine the previous price of a 2 kg bag of sugar in November if it was R37,99 in December. (3)
- 2.3 A passenger investigates the claim that an increase in petrol prices caused inflation.
- 2.3.1 During which month was the dollar strongest? (2)
- 2.3.2 The passenger concluded that the month-on-month inflation rate from June to July was the same as calculated with the rand/dollar exchange rate as that of the petrol price. Justify his conclusion using relevant calculations. (6)
- 2.3.3 Many people have complained that prices of goods and services have increased, yet no salary increase has been made. What advice can you give them to ensure that they still meet their needs? (2)

[25]

TOTAL: 50

Assignment 1 Memorandum

Duration: 1 hour Total marks: 50

Assignment 1 Memorandum

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RG	Reading from graph
SF	Correct substitution in a formula
O	Opinion
P	Penalty for incorrect units/ incorrect rounding off
NP	No penalty

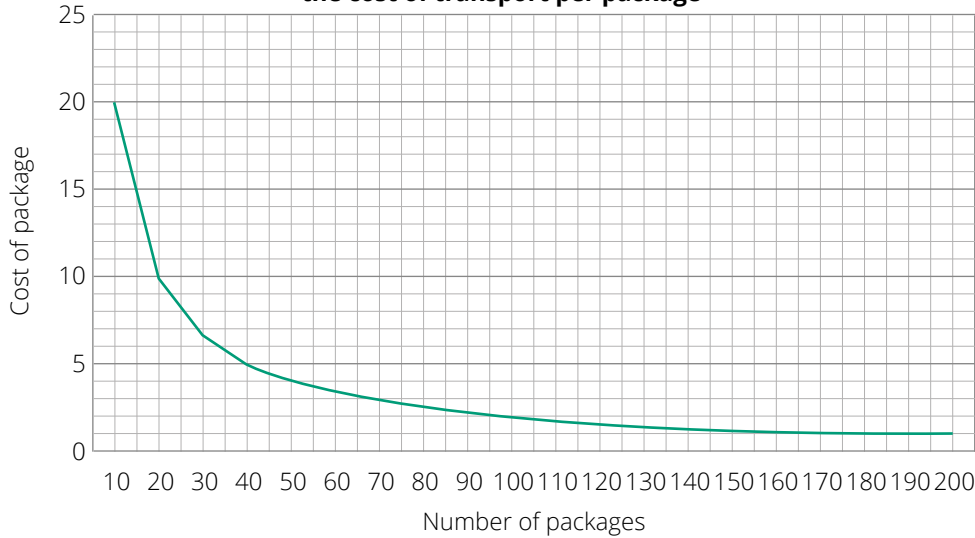
QUESTION 1				
	SOLUTION	MARKS	EXPLANATION	TL
1.1	1.1.1 $^{\circ}\text{C} = (^{\circ}\text{F} - 32^{\circ}) \div 1,8$ $= (14^{\circ} - 32^{\circ}) \div 1,8 \checkmark$ $= -10^{\circ}\text{C} \checkmark$	(2)	2C Conversion	2
	1.1.2 5 litres = $5 \times 1\,000$ $= 5\,000\text{ ml} \checkmark$ 100 ml require 50 g of syrup \checkmark 5 000 ml require $\frac{5\,000 \times 50}{100}$ $= 2500\text{ g} \checkmark$	(3)	1C Conversion 1M dividing by 100 1CA Answer	2
	1.1.3 $50\text{ g} : 100\text{ml} = 1\text{ g} : 2\text{ml} \checkmark\checkmark$	(2)	2SF Simplification	2
1.2	$32,8\text{ minutes} = 32\text{ minutes} + 0,8 \times 60\text{ seconds}$ $= 32\text{ minutes and } 48\text{ seconds} \checkmark$	(2)	1 C Conversion 1CA Answer	2
1.3	1.3.1 Indirect/ inverse relationship $\checkmark\checkmark$	(2)	2A Answer	1
	1.3.2 As the number of packages increases, the cost per package decreases $\checkmark\checkmark$	(2)	2A Answer	1
	1.3.3 See ANSWER SHEET 1	(4)	3A Correct points 1A correct shape	3
	1.3.4 $P = R4 \checkmark\checkmark$ $Q = 100\text{ packages} \checkmark\checkmark$ (See graph in ANSWER SHEET 1)	(4)	2RG reading 2RG Reading	1

[21]

Assignment 1 Memorandum

ANSWER SHEET 1

Relationship between number of packages transported and the cost of transport per package



QUESTION 2				
	SOLUTION	MARKS	EXPLANATION	TL
2.1	Total fixed costs = R8 000 + R3 000 + R4 000 ✓ = R15 000	(2)	1M adding 1CA Answer	2
2.2	2.2.1 a) Income = R500 × Number of bags sold ✓✓	(2)	2A Answer	2
	b) Total costs = R15 000 + R200 × Number of bags ✓✓	(2)	2A Answer	2
	2.2.2 a) 60 bags ✓✓ OR R30 000 = R500 × n Therefore, n = R30 000 ÷ R500 = 60 bags ✓✓	(2)	2A Answer only full marks	2
	b) 25 bags ✓✓	(2)	2A Answer only full marks	2
	c) 50 bags ✓✓	(2)	2A Answer only full marks	1
2.3	Profit/ loss on 60 bags = R30 000 ✓ - 27 000 ✓ = R3 000 ✓	(3)	1RG reading from the graph 1M Subtraction 1CA Answer	2
2.4	Income = R500 × 150 bags = R75 000 ✓ Total costs = R15 000 + R200 × 150 bags = R45 000 ✓ Profit = R75 000 - R45 000 = R30 000 ✓ Muzi is right ✓	(4)	1M Income 1M Total costs 1M Profit 1E explanation	3
2.5	2.5.1 15% × R4 000 ✓ = R600 ✓	(2)	1M Multiplying 1CA Answer	2
	2.5.2 R600 × 4 × 12 months × 14 members ✓ = R403 200 ✓ They will be able to buy the minibus ✓	(3)	1M Multiplying 1CA Answer 1E Explanation	2

Assignment 1 Memorandum

2.6	Deposit = $20\% \times R320\ 000$ = R64 000 ✓ Balance = $R320\ 000 - R64\ 000$ = R256 000 ✓ Total repayment = $R256\ 000 + 11\% \times R256\ 000 \times 5$ ✓ = R396 800 ✓ Monthly instalment = $R396\ 800 \div 60$ months = R6 613,33 ✓	(5)	1M Getting 20% 1CA Answer 1M Interest 1M Total repayment 1CA Monthly instalment	3
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[29]

TOTAL: 50

Assignment 2 Memorandum

1.3	1.3.1 Discrete ✓	(1)	1CA Answer	1
	1.3.2 Mode = 32 infections ✓✓	(2)	1CA Mode	1
	1.3.3 Average = $\frac{1\ 016}{30}$ ✓✓ = 33,87 patients ✓	(3)	2MA Dividing by 30 1CA Answer	2
	1.3.4 Range = 51 – 12 ✓ = 39 patients ✓	(2)	1MA Subtracting 1CA Range	2
	1.3.5 P(More than 30 people) = $\frac{23}{30} \times 100\%$ ✓ = 75,67% ✓ The mayor is right ✓	(3)	1MA Calculating percentage 1CA Percentage 1O Explanation	4

[25]

QUESTION 2

	SOLUTION	MARKS	EXPLANATION	TL
2.1	2.1.1 Taxi fare ✓✓	(1)	1CA Answer	1
	2.1.2 Percentage capacity = $\frac{8}{14} \times 100\%$ ✓ = 57,14% ✓ The taxi driver is not abiding by the Covid-19 rules ✓	(3)	1MA Calculating percentage 1CA Percentage 1O Explanation	4
	2.1.3 Average taxi fare = $(27 + 38 + 50) \div 12$ ✓ = $115 \div 12$ ✓ = R9,58 ✓	(3)	2MA Dividing by 12 1CA Answer	2
2.2	2.2.1 May ✓ because the dollar is sold at a lower price than other months ✓	(2)	1CA Answer 1O Explanation	2
	2.2.2 Inflation rate = $\frac{R15,20 - R14,90}{R14,90} \times 100\%$ ✓✓ = 2,09% ✓	(3)	2SF Substitution 1CA Percentage	2
	2.2.3 $102,09\% = R37,99$ $100\% = \frac{100 \times R37,99}{102,09}$ ✓ = R37,21 ✓	(3)	2MA 100% Value 1CA Answer	2
2.3	2.3.1 December ✓	(2)	1 CA Answer	1
	2.3.2 Petrol prices Inflation rate = $\frac{R14,60 - R14,00}{R14,00} \times 100\%$ ✓ = 4,29% ✓ Dollar exchange rate Inflation rate = $\frac{R14,40 - R14,20}{R14,20} \times 100\%$ ✓ = 1,41% ✓ The inflation rates were different. ✓ The claim is not valid ✓	(6)	1SF Substitution 1CA Percentage 1SF Substitution 1CA Percentage 2O Explanation	4
	2.3.3 They should reduce unnecessary expenses ✓✓	(2)	2O Suggestion	2

[25]

TOTAL: 50

Exemplar Assessments

Term 1 Test

Duration: 1 hour Total marks: 50

Term 1 Test

Instructions

1. Number your work according to the numbering system used in the question paper.
2. Show all calculations to be able to earn more marks.
3. Write all your answers in ink. Leave a line before writing a solution to the next question.
4. Round off the final answers appropriately according to the context, unless otherwise stated.
5. Please use ANNEXURE A to answer Question 3.

Question 1

A trader who deals in shoes is investigating a business proposal to see whether it will be viable or not. He uses the following table to check the possible income and costs, as well as the profits. Study the table and use it to answer the following questions.

Table 1: Investigating the income and total costs for different pairs of shoes

Number of pairs	0	20	40	A	80	100	180	200
Total costs (R)	20 000	26 000	32 000	38 000	44 000	50 000	74 000	80 000
Income (R)	0	10 000	20 000	30 000	40 000	50 000	B	100 000

- 1.1 Before starting up the business, he needs a certain amount of money to cover his fixed costs as well as the initial variable costs.
 - 1.1.1 How much does the trader need to cover his fixed costs? (2)
 - 1.1.2 How much does he need to buy one pair of shoes? (2)
 - 1.1.3 Write a formula that he can use to calculate his total costs. (2)
- 1.2 He will need a big income to be able to break even and to make enough profit.
 - 1.2.1 Write a formula that he can use to calculate his income. (2)
 - 1.2.2 What is his profit or loss when he buys and sells 40 pairs of shoes? (2)
 - 1.2.3 Determine the values of A and B in the table above. (4)
 - 1.2.4 How many pairs of shoes must he sell to break even? (2)

[16]

Question 2

2.1 A telephone company has a landline service and a cellphone service. The cellphone service is either on contract or prepaid. The phone tariffs are shown below.

Description	Landline	Cellphone tariffs	
		Contract	Prepaid
Monthly rental	R150	–	–
Normal call rates	R0,50 per minute	R1 per minute	R2 per minute
Other charges	–	R250 per month	–
Monthly benefits	200 free minutes	100 free minutes and free handset	–

- 2.1.1 Write a formula that you can use to calculate the amount you would pay every month if you use:
- a) the landline service (2)
 - b) the prepaid service (2)
- 2.1.2 How much would you pay in a month if you used 300 minutes and you are subscribed to the:
- a) contract cellphone service (2)
 - b) prepaid cellphone service (2)
- 2.1.3 Determine the actual cost of a handset if the contract length is two years. (4)
- 2.2 Linda runs a telephone service business near a university. She charges R2,50 per minute, or part thereof, for a call. She expects her total usage to be 2 000 minutes.
- 2.2.1 How much would Linda's income be if she sold 2 000 minutes worth of phone calls? (2)
- 2.2.2 Using the relevant calculations, show which service would be best for her clients. (6)
- [20]

Question 3

Nolwazi stays on one side of town. Every morning from Monday to Saturday, she goes to school and then visits her mother's place of work at the mall to do her homework as she waits for her mother to drive her back home via the traffic circle. The map in ANNEXURE A shows the area in which her three important destinations are located.

- 3.1 In which general direction is Crescent school from Nolwazi's home? (2)
- 3.2 Describe how Nolwazi goes from school to her mother's place of work and then home with her mother. (3)
- 3.3 Nolwazi shows a friend the same map as the one shown but with a scale of 1:100 000. On the map, her home is 8 cm from the school. Calculate the distance she covers from school to her home. (3)
- 3.4 The road network in this area permits a maximum speed of 60 km/h. Assuming they drive at maximum speed from school to her mother's place of work and finally to their home, how many minutes would it take them?

Term 1 Test

You may use the formula:

Time = Distance ÷ Speed

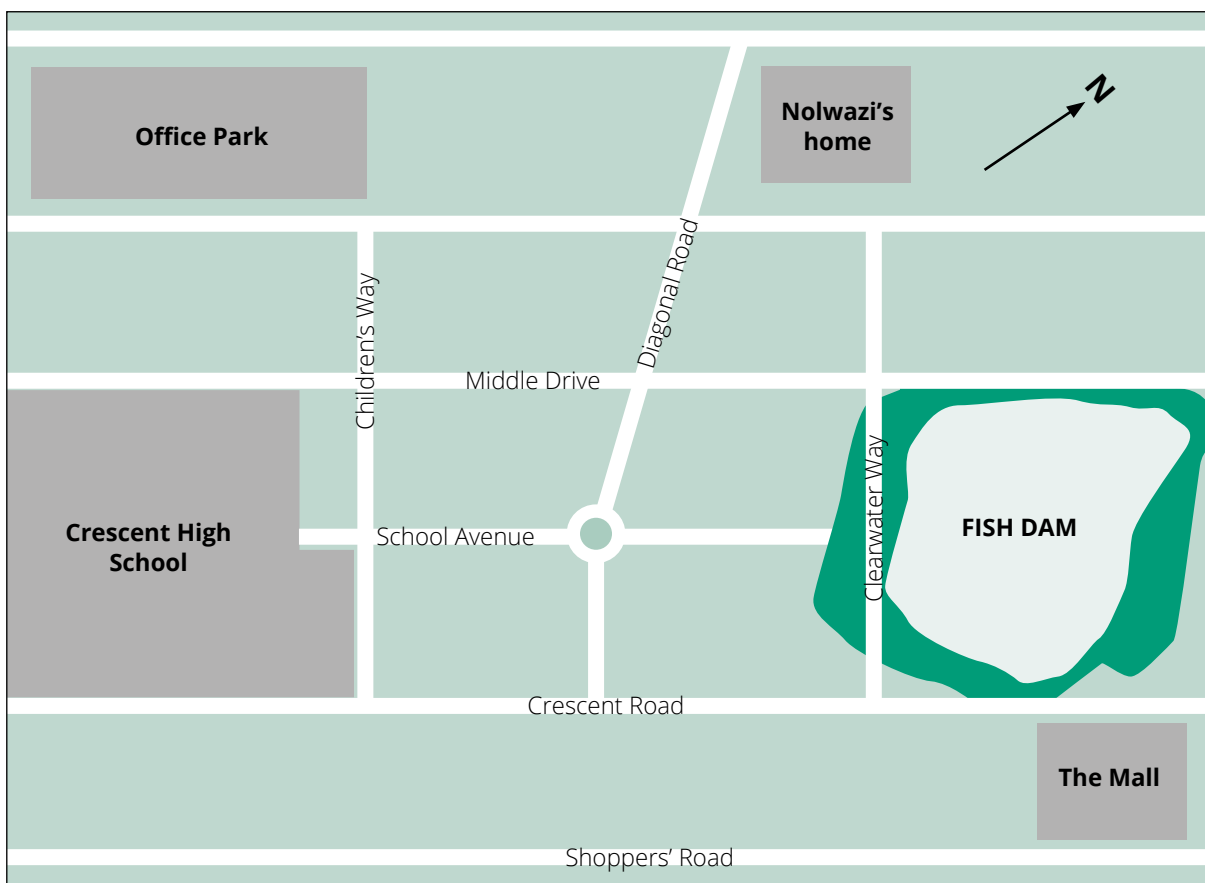
(3)

- 3.5 The petrol consumption of the car they use is 12 litres per 100 km. How much petrol will they use to cover this distance? (3)

[14]

ANNEXURE A

For Question 3



Term 2 Test

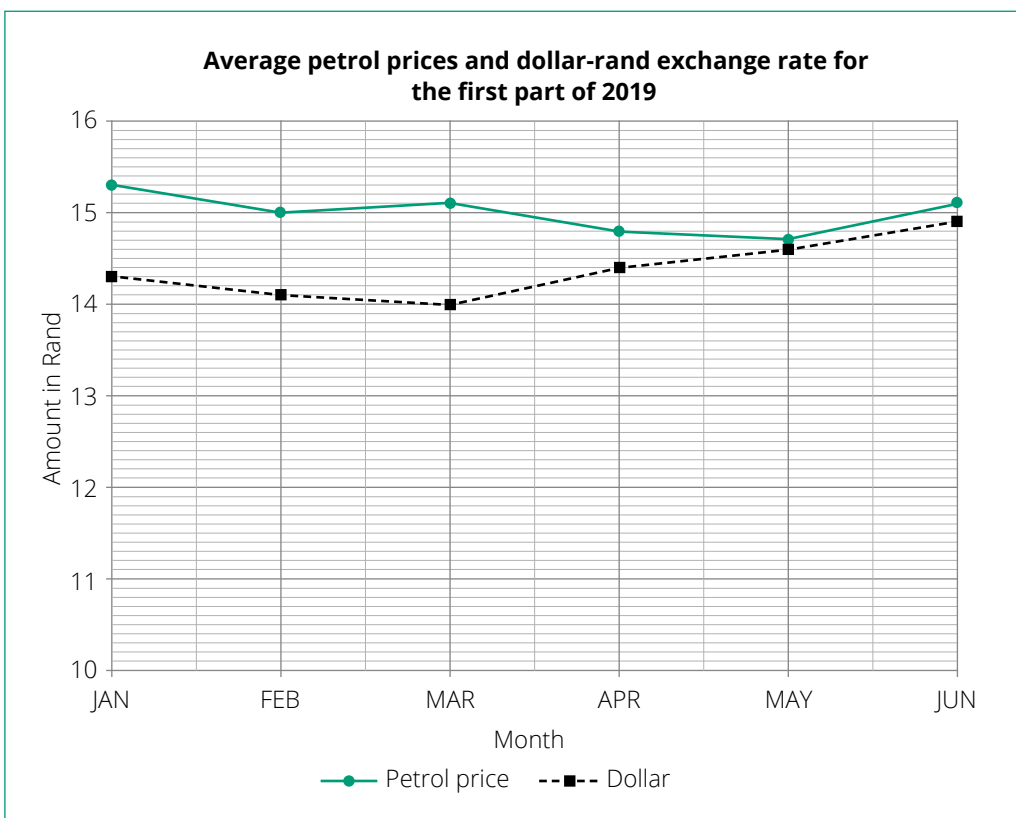
Instructions

1. Number your work according to the numbering system used in the question paper.
2. Show all calculations to be able to earn more marks.
3. Write all your answers in ink. Leave a line before writing a solution to the next question.
4. Round off the final answers appropriately according to the context, unless otherwise stated.
5. Please use ANSWER SHEET 1 for Question 3.2.4.

Question 1

The economy of South Africa has been affected by many factors like politics, Covid-19, fuel prices and foreign exchange.

The graph below shows the changes in petrol prices and the US dollar to rand exchange rate.



- 1.1 For what month was the cost of the US dollar almost the same as the petrol price? (2)
- 1.2 Describe the general trend of the petrol price in relation to the rand/dollar exchange rate. (2)
- 1.3 Dumi wanted to travel to the United States and do some shopping. She wanted to get the best price for her purchases. What month would be the most suitable for her to travel? (2)

Term 2 Test

- 1.4 Use the prices of petrol and the rand/ dollar exchange rates for March and April to show whether the petrol price and dollar had the same influence on inflation or not. (5)

You may use the following formula:

$$\text{Inflation} = \frac{\text{Current CPI} - \text{Previous CPI}}{\text{Previous CPI}} \times 100\%$$

- 1.5 According to the graph, what is the general effect of the US dollar on the petrol price? (2)

[13]

Question 2

Nikiwe wants to buy a sound bar system. She has seen the following specifications for a certain type of sound bar. The price and payment terms are given on the website.

Product information for the sound bar system

		<ul style="list-style-type: none"> • Bluetooth speaker system • Wireless subwoofer • 6 speaker bar with tuner • 600 cm bar with slim tech • 12" subwoofer cone in 18 cm by 34 cm by 32 cm
<p>From USA at \$400 including shipping From local store at R5 200 including 15% VAT Hire purchase: 20% deposit and R350 for 24 months.</p>		

- 2.1 Nikiwe considers buying the sound bar on hire purchase terms in a local store.
- 2.1.1 Calculate the deposit Nikiwe would need to pay if she buys the sound bar from a local store? (3)
- 2.1.2 How much in total would Nikiwe need to pay for the sound bar if she chooses the hire purchase terms of payment? (3)
- 2.1.3 What interest rate per annum is charged on the hire purchase terms of payment if the store charges simple interest? (6)
- 2.2 If the exchange rate of the US dollar (\$) to the South African rand (R) is \$1/R14,78. How much would Nikiwe save if she buys the sound bar from a local store at the cash price instead of buying it from USA? (4)

[16]

Question 3

3.1 A group of insurance researchers investigated the number of minor and major accidents in the cities of South Africa for a year. The aim of the research was to determine their premiums. Their findings are shown in the table below.

JAN	FEB	MAR	APR	MAY	JUN
1 212	803	702	1 523	923	614
JUL	AUG	SEP	OCT	NOV	DEC
502	614	702	135	922	281

3.1.1 Determine:

- a) the range of the accidents in the cities (2)
- b) the mode of the accidents in the cities. (2)

3.1.2 Determine:

- a) the median of the data (2)
- b) the mean of the data. (2)

3.1.3 Which of the measures of central tendency and spread would be better for the insurance company to use to determine its premiums? Give a reason for your answer. (2)

3.2 The researchers further investigated the gender and age group that were most likely to get involved in accidents. The following information was obtained.

Age group	Females	Males
18 – 27	1 932	2 982
28 – 37	1 412	1 585
38 – 47	421	656
48 – 57	248	370
58 – 67	98	228

- 3.2.1 Is the data continuous or discrete? (1)
- 3.2.2 Use the results to determine the age group and gender that should be charged the highest premiums. Explain why. (2)
- 3.2.3 Suggest a reason for the very low number of accidents in the age group of 58 – 67 compared to other age groups. (2)
- 3.2.4 Use the information to draw a double bar graph to compare the number of accidents recorded due to male and female drivers. Use the grid on ANSWER SHEET 1 (6)

[21]

TOTAL: 50

Term 2 Test

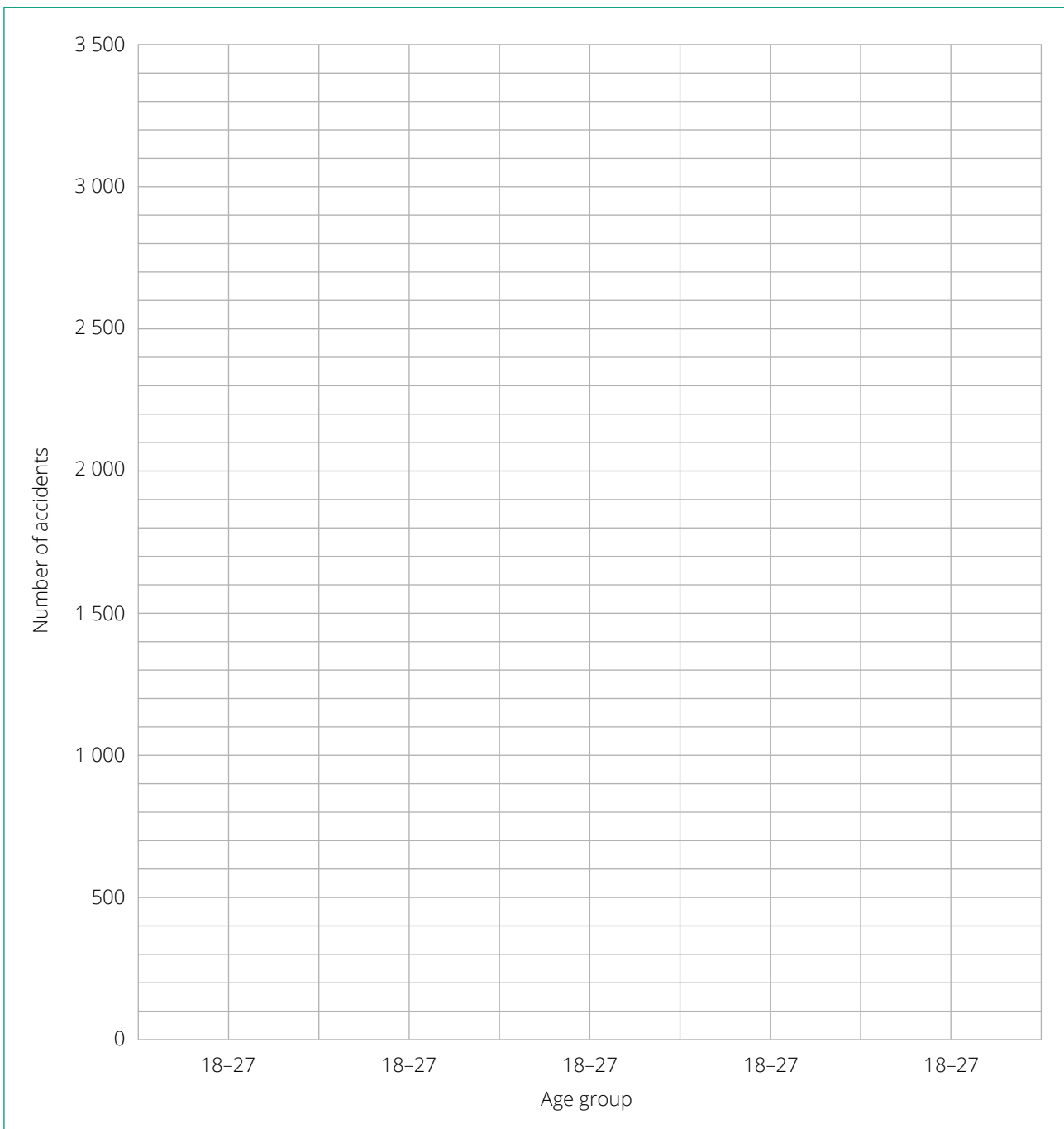
ANSWER SHEET 1

Name:

Surname:

Grade:

For Question 3.2.4



Term 3 Test

Duration: 1 hour Total marks: 50

Term 3 Test

Instructions

1. Number your work according to the numbering system used in the question paper.
2. Show all calculations to be able to earn more marks.
3. Write all your answers in ink. Leave a line before writing a solution to the next question.
4. Round off the final answers appropriately according to the context, unless otherwise stated.
5. Please use the following annexures:
 - ANNEXURE A for Question 1
 - ANNEXURE B for Question 2

Question 1

- 1 The plans of the back of Maggie’s new house, viewed from the pool side and the ground, are shown in ANNEXURE A. The structural drawings are not made to scale. Study the drawings and use them to answer the following questions.
- 1.1 In which direction is the house facing? (2)
- 1.2 Determine the length A of the bathroom on the back side of the house. Give your answer in metres. (5)
- 1.3 The back wall of the house is to be scraped and plastered again. The thickness of the plaster will be 2 cm.
- 1.3.1 Calculate the surface area of the wall to be plastered.
 (1 m = 1 000 mm 1 m² = 1 000 000 mm²) (8)
- 1.3.2 Maggie plans to have the lounge tiled. The tiles come in boxes containing 6 tiles. Each tile is 0,36 m². Calculate the cost of the tiles if each box costs R230. (5)
- 1.4 Maggie and her friend's houses are shown on a map with a scale of 1: 100 000. Her friend measures the distance between the houses and finds out that it is 13,2 cm on the map.
- 1.4.1 Explain the meaning of the scale. (2)
- 1.4.2 Determine the actual distance between Maggie’s house and her friend’s address. (3)

[25]

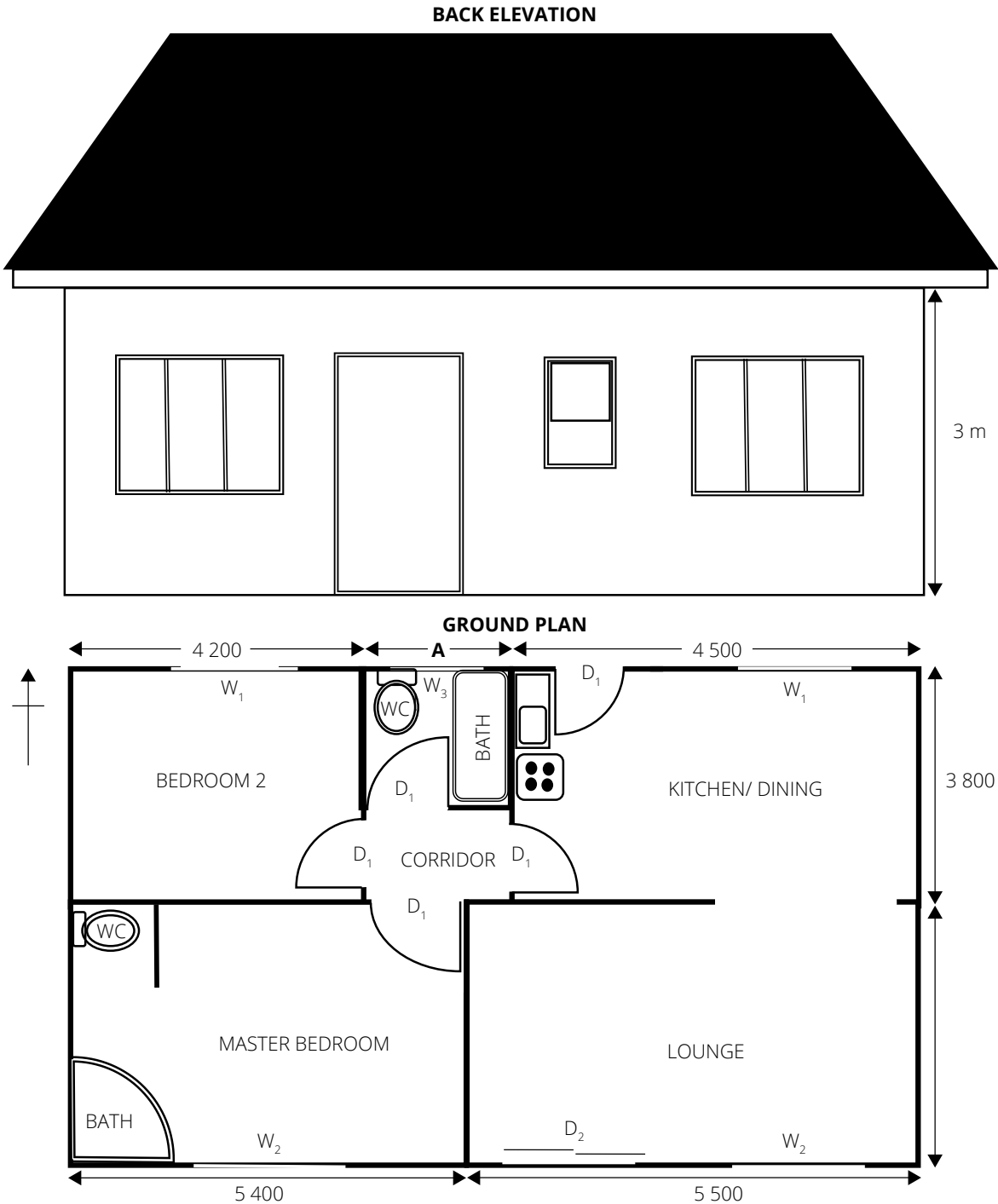
Term 3 Test

Question 2

- 2 The graphs in ANNEXURE B show the tariffs used by a telephone company. Study the graph and answer the following questions.
- 2.1 How much would you pay if you use:
- 2.1.1 125 minutes and you subscribe to Package A (2)
- 2.1.2 200 minutes and you subscribe to Package B. (2)
- 2.2 Customers subscribe to different packages and use varying numbers of minutes. The telephone company prefers to use graphs or equations to work out the amount their customers would have to pay every month.
- 2.2.1 Write down the equation that you can use to calculate the amount you would pay if you subscribe to:
- a) Package A (2)
- b) Package B. (2)
- 2.2.2 Use your equations, or otherwise, to:
- a) determine the number of minutes used if you are pay R500 on Package A (2)
- b) calculate the amount you would pay if you used 750 minutes and you are on Package B. (2)
- 2.2.3 If you make many calls every month, which one is the best package? (2)
- 2.3 For how many minutes would you pay the same amount for both packages? (2)
- 2.4 The telephone company intends to launch another package whereby a customer will pay R300 and receive 200 free minutes. Thereafter, the customer will pay R1,50 per minute.
- 2.4.1 Write the equation that can be used to calculate the amount payable for the minutes used. (2)
- 2.4.2 Use the equation to determine the amount payable if one uses 700 minutes. (2)
- 2.4.3 Pinkie says that the new package will be better for her than the current Package A as she is planning to use only 450 minutes. Justify this claim using relevant calculations. (5)
- [25]

ANNEXURE A

For Question 1



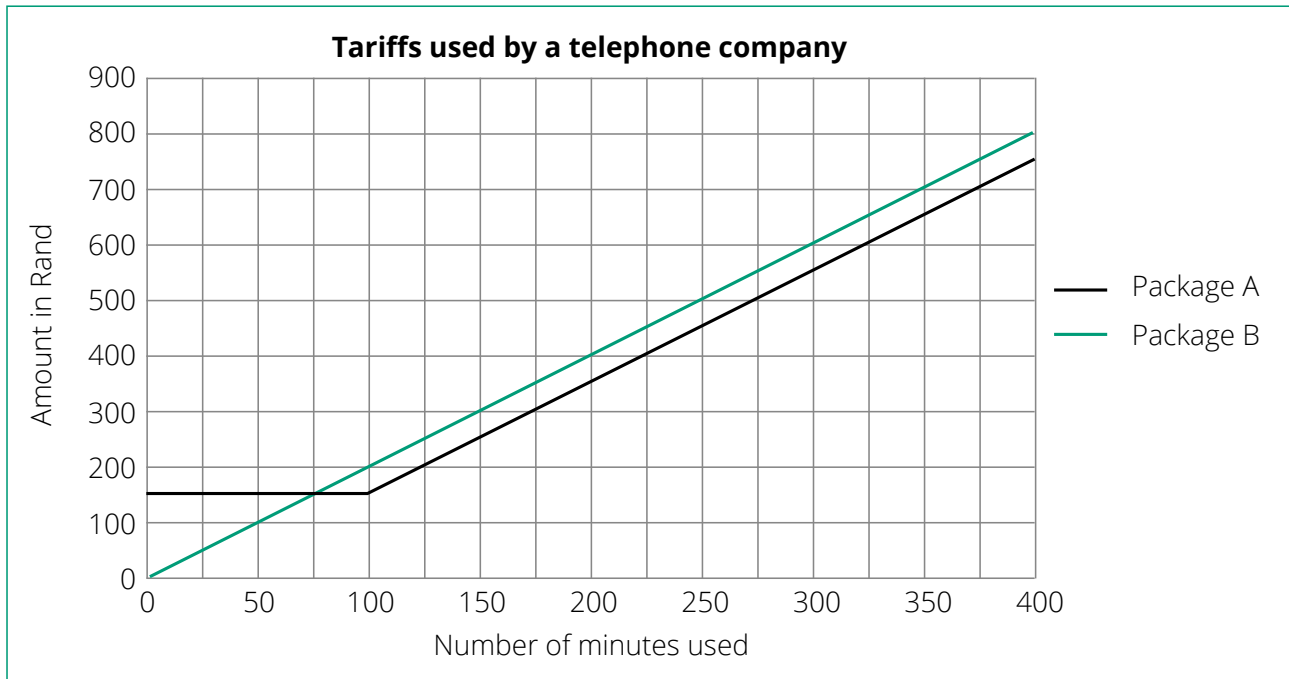
WINDOW AND DOOR SCHEDULE

Window	Specifications	Door	Specifications
W ₁	1 000 mm × 1 500 mm	D ₁	900 mm × 2 000 mm
W ₂	1 200 mm × 1 500 mm	D ₂ (Sliding door)	1 400 mm × 2 000 mm
W ₃	500 mm × 600 mm	All dimensions are given as “width by height”	

Term 3 Test

ANNEXURE B

For Question 2



Term 1 Test Memorandum
Duration: 1 hour Total marks: 50

Term 1 Test Memorandum

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RG	Reading from graph
SF	Correct substitution in a formula
O	Opinion
P	Penalty for incorrect units/ incorrect rounding off
NP	No penalty

QUESTION 1				
	SOLUTION	MARKS	EXPLANATION	TL
1.1	1.1.1 R20 000 ✓✓	(2)	2A Answer	1
	1.1.2 1 pair = $(R26000 - R20000) \div 20$ ✓ = R300 ✓	(2)	1M Dividing by 20 1CA Answer	2
	1.1.3 Total costs = $R20\ 000 + R300 \times \text{Number of pairs}$ ✓✓	(2)	2A Formula	2
1.2	1.2.1 Income = $R500 \times \text{Number of pairs}$ ✓✓	(2)	2A Formula	2
	1.2.2 Profit/loss = $R20\ 000 - R32\ 000 = -R12\ 000$ ✓ He makes a loss of R12 000 ✓	(2)	1M subtracting. 1A Answer	2
	1.2.3 $A = R30\ 000 \div R500 = 60$ pairs ✓ $B = R500 \times 180$ pairs = 90 000 ✓✓	(4)	2A for 60 pairs 2A for R90 000	2
	1.2.4 100 pairs ✓✓	(2)	RG Read from table	1
				[16]

QUESTION 2				
	SOLUTION	MARKS	EXPLANATION	TL
2.1	2.1.1 a) Monthly payment = $R150 + R0,50 \times \text{minutes above}$ = 200 minutes ✓✓	(2)	2A Formula	2
	2.1.1 b) Monthly cost = $R2 \times \text{Number of minutes used}$ ✓✓	(2)	2A Formula	2
2.1.2	a) Amount = $R250 + (R300 - R100) \times R1$ ✓ = R450 ✓	(2)	1M Calculation 1CA Answer	2
	b) Amount = $R2 \times 300$ minutes ✓ = R600 ✓	(2)	1M multiplying by R2 1CA Answer	2
	2.1.3 $R250 - R1 \times 100$ minutes = R150 ✓ $R150 \times 24$ months ✓ = R3 600 ✓	(4)	1M Subtracting 100 1CA Answer 1M Multiplying 1CA Answer	3

Term 1 Test Memorandum

2.2	2.2.1	Income = $R2,50 \times 2\,000$ minutes ✓ = R5 000 ✓	(2)	Multiplying by R2,50 1CA Answer	2
	2.2.2	On landline Cost = $R0,50 \times (2\,000 - 200)$ minutes + R150 = R1 050 ✓ On Prepaid Cost = $R2 \times 2\,000$ ✓ = R4 000 ✓ On contract Cost = $R250 + R1 \times (2\,000 - 100)$ ✓ = R2 150 ✓ The best in the landline ✓	(6)	1CA Answer 1M Multiplying 1CA Answer 1M Calculation 1CA Answer 1O Right choice	3

[20]

QUESTION 3

	SOLUTION	MARKS	EXPLANATION	TL
3.1	South ✓✓	(2)	2CA Answer	1
3.2	Walk in a North Westerly direction along Children's Way, ✓ then turn left on Central Street. ✓ From her mother's place of work, they move in the North Easterly direction along Central Street ✓ and turn left into Diagonal Road	(3)	3O Description	2
3.3	Distance = $8\text{ cm} \times 100\,000$ = $800\,000\text{ cm}$ ✓ = $800\,000 \div 100\,000$ ✓ = 8 km ✓	(3)	1M Multiplying 1M Divide by 100 000 1CA Answer	2
3.4	Time = $8\text{ km} \div 60 = 0,133\dots$ hours ✓ = $0,133\dots \times 60$ ✓ = 8 minutes ✓	(3)	1M Use of formula 1C Conversion 1CA Answer	2
3.5	100 km requires 12 litres 8 km requires $\frac{8 \times 12}{100}$ ✓✓ = $0,96\text{ litres}$ ✓	(3)	1M Multiply by 12 1M Divide by 100 1CA Answer	2

[14]

TOTAL: 50

Term 2 Test Memorandum
Duration: 1 hour Total marks: 50

Term 2 Test Memorandum

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RG	Reading from graph
SF	Correct substitution in a formula
O	Opinion
P	Penalty for incorrect units/ incorrect rounding off
NP	No penalty

QUESTION 1				
	SOLUTION	MARKS	EXPLANATION	TL
1.1	May ✓✓	(2)	1CA Answer	1
1.2	Generally, when the price of the US dollar increases, the petrol price also increases ✓	(2)	2O Explanation	1
1.3	March ✓✓	(2)	2CA Answer	1
1.4	Inflation using the dollar rate as CPI $\text{Inflation} = \frac{\text{Current CPI} - \text{Previous CPI}}{\text{Previous CPI}} \times 100\%$ $= \frac{R14,40 - R14}{R14} \times 100\% \checkmark$ $= 1\% \checkmark$ Inflation using the petrol price as CPI $\text{Inflation} = \frac{\text{Current CPI} - \text{Previous CPI}}{\text{Previous CPI}} \times 100\%$ $= \frac{R14,80 - R15,10}{R15,10} \times 100\% \checkmark$ $= -2\% \checkmark$ The petrol price shows a negative inflation (deflation) and the dollar/rand exchange rate shows inflation. In this case, there is no relationship. ✓	(5)	2SF Substitution 1CA Getting 1% 2SF Substitution 1CA Getting 2% 1O Explanation	4
1.5	Generally, when the dollar price increases, the price of petrol also increases. ✓✓	(2)	2O Explanation	
				[13]

QUESTION 2				
	SOLUTION	MARKS	EXPLANATION	TL
2.1	2.1.1 Deposit = $\frac{20}{100} \times R5\,200 \checkmark$ $= R1\,040 \checkmark$	(3)	1M Divide by 100 1M Multiply by 5 200 Answer R1 030	2
2.1	2.1.2 Total payment = $R1\,040 + R350 \times 24 \text{ months} \checkmark \checkmark$ $= R9\,440 \checkmark$	(3)	2SF Substitution 2A Answer	2

Term 2 Test Memorandum

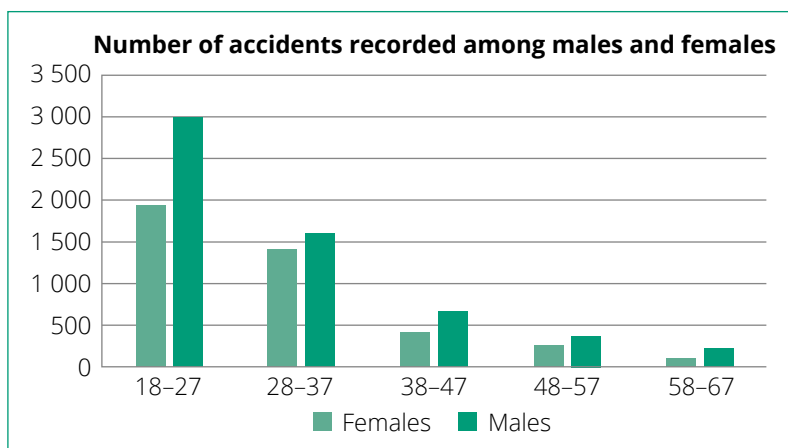
2.1.3	$\text{Interest added} = R9\,440 - R5\,200 \checkmark$ $= R4\,240 \checkmark$ $\text{Annual interest} = R4\,240 \div 2 \checkmark$ $= R2\,120 \checkmark$ $\text{Annual interest rate} = \frac{R2\,120}{R5\,200} \times 100\% \checkmark$ $= 40,79\% \checkmark$	(6)	2M Calculating interest 1M Dividing by 2 1CA Answer 2CA Annual interest	3
2.2	In USA $\text{Price} = \$400$ $= 400 \times R14,78 \checkmark$ $= R5\,912 \checkmark$ $\text{Amount saved} = R5\,912 - R5\,200 \checkmark$ $= R712 \checkmark$	(4)	2C Conversion 1M Subtraction 1CA Answer	3

[16]

QUESTION 3

	SOLUTION	MARKS	EXPLANATION	TL
3.1	3.1.1 a) $\text{Range} = 1\,523 - 135 \checkmark$ $= 1\,388 \text{ cases} \checkmark$	(2)	1M Subtraction 1CA Answer	2
	b) 614 and 702 cases $\checkmark\checkmark$	(2)	2CA Mode	1
	3.1.2 a) 135; 502; 614; 614; 702; 702; 803; 922; 923; 1 212; 1 281; 1 523 $\text{Median} = (702 + 803) \div 2 \checkmark$ $= 752,5 \text{ cases} \checkmark$	(2)	1M Arranging And dividing by 2 1CA Range	2
	(b) $(135 + 502 + 614 + 614 + 702 + 702 + 803 + 922 + 923 + 1\,212 + 1\,281 + 1\,523) \div 12 \checkmark$ $= 827,75 = 828 \text{ cases} \checkmark$	(2)	1 Method 1CA Answer	2
	3.1.3 The median \checkmark because it gives a more reliable number of accidents. This is because there is an outlier. \checkmark	(2)	2O Explanation	2
3.2	3.2.1 Discrete \checkmark	(1)	1CA Answer	1
	3.2.2 Males (18 – 27) \checkmark They are at a higher risk for accidents \checkmark	(2)	1CA Age group 1O Explanation	1
	3.2.3 Very few of them drive. $\checkmark\checkmark$ (Any other valid reason)	(2)	2O Explanation	1

3.2.4



[21]

TOTAL: 50

Term 3 Test Memorandum

1.4	1.4.1 1 unit on the map represents 100 000 units in reality ✓	(2)	2CA Description	2
	1.4.2 Actual distance = $13,2 \times 100\ 000$ = 1 320 000 cm ✓ = $1\ 320\ 000 \div 100\ 000$ ✓ = 13,2 km ✓	(3)	1MA Distance in cm 2C Conversion	2
[25]				
QUESTION 2				
	SOLUTION	MARKS	EXPLANATION	TL
2.1	2.1.1 R200 ✓✓	(2)	2 CA Answer	1
	2.1.2 R400 ✓✓	(2)	2 CA Answer	1
2.2	2.2.1 a) Amount = $R150 + R2 \times \text{minutes above } 100$ minutes ✓	(2)	2CA Formula	2
	b) Amount = $R2 \times \text{Number of minutes used}$ ✓✓	(2)	2CA Formula	2
	2.2.2 a) $R500 = R150 + R2 \times n$ Where $n = \text{minutes above } 100$ $R500 - R150 = R2 \times n$ $350 = 2n$ $n = 175$ minutes Therefore minutes used are 275 ✓✓ (OR reading from the graph) ✓✓	(2)	2CA Answer	2
	b) Amount = $R2 \times 750$ minutes ✓ = R1 500 ✓	(2)	1MA Minutes 1CA Amount	2
	2.2.3 Package A ✓✓	(2)	2CA Answer	1
2.3	75 minutes ✓✓	(2)	2CA Answer	1
2.4	2.4.1 Amount = $R300 + R1,50 \times \text{minutes above } 200$ minutes ✓✓	(2)	2CA Formula	2
	2.4.2 Amount = $R300 + R1,50 \times (700 - 200)$ minutes ✓ = R1 050 ✓	(2)	2SF Substitution	2
	2.4.3 Package A Amount = $R150 + R2 \times (450 - 100)$ minutes ✓ = R850 ✓ New package Amount = $R300 + R1,50 \times (450 - 200)$ minutes ✓ = R675 ✓ Pinkie is right. The new package will be R175 cheaper than Package A. ✓	(5)	2CA Package A 2CA New package 1O Comparison	4
[25]				

TOTAL: 50

Final Examination papers

Final Examination Paper 1

Duration: 2 hours Total marks: 100

Final Examination Paper 1

Name: _____

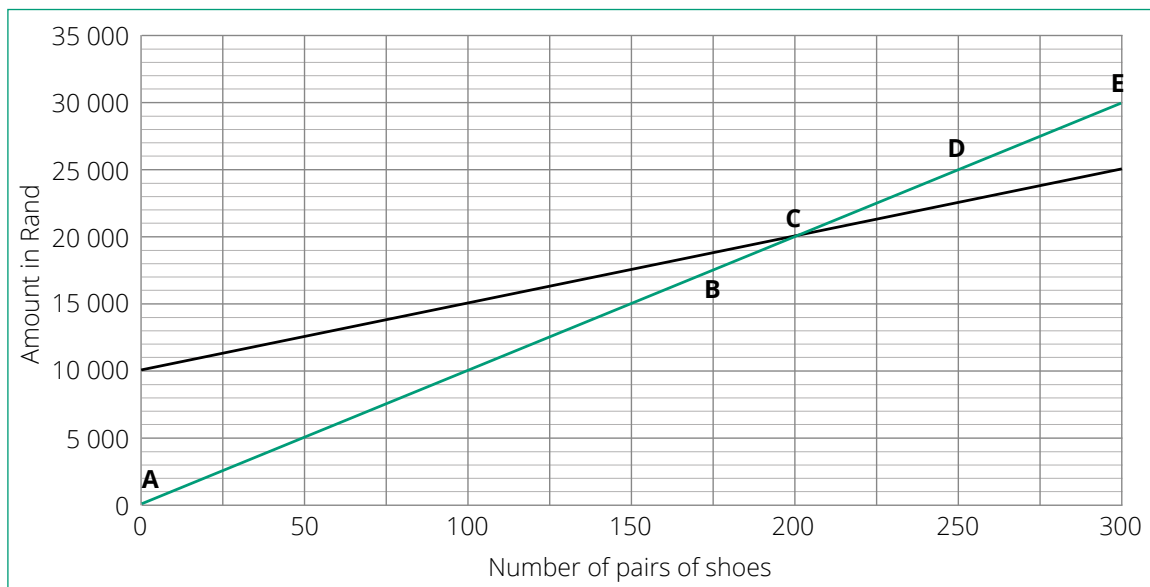
Surname: _____

Instructions

1. Number your work according to the numbering system used in the question paper.
2. Show all calculations to be able to earn more marks.
3. Write all your answers in ink. Leave a line before writing a solution to the next question.
4. Round off the final answers appropriately according to the context, unless otherwise stated.

Question 1

Pamela buys and sells second hand shoes. She cleans them and sells them with a mark-up. Pamela's income and total costs on the shoes are shown in the graph. Study the information and use it to answer the questions that follow.



- 1.1 Pamela has fixed costs, variable costs and an income which varies according to the number of pairs sold each month.
 - 1.1.1 How much do her fixed monthly costs come to? (2)
 - 1.1.2 How much does she receive when she sells 100 pairs of shoes? (2)
 - 1.1.3 How many pairs can she buy in a month if she spends R14 000? (2)
- 1.2 Pamela does not want to incur a loss.

Final Examination Paper 1

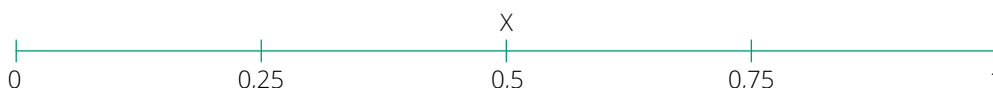
- 1.2.1 What is the minimum number of pairs she must sell to avoid a loss? (2)
 - 1.2.2 For the minimum number of pairs of shoes, she neither makes a profit or a loss. Give a term that refers to this concept of avoiding a loss in any business. (2)
 - 1.3 Write down the letter that indicates a:
 - 1.3.1 loss (2)
 - 1.3.2 very small profit (2)
 - 1.3.3 very large loss (2)
 - 1.4 What advice would you give to business people to improve their profits? (2)
 - 1.5 Would Pamela make a profit or loss if she sells 120 pairs? (2)
- [20]

Question 2

2.1 A group of researchers investigated the causes of accidents on South Africa’s roads. Their investigation was carried out on the major roads in South Africa. The following records were made.

Over-speeding (P)	112	Messaging while on road (M)	43
Un-roadworthy vehicle (U)	111	Unqualified drivers (Q)	72
Drunken driving (D)	157	Sudden, unexpected faults(S)	19

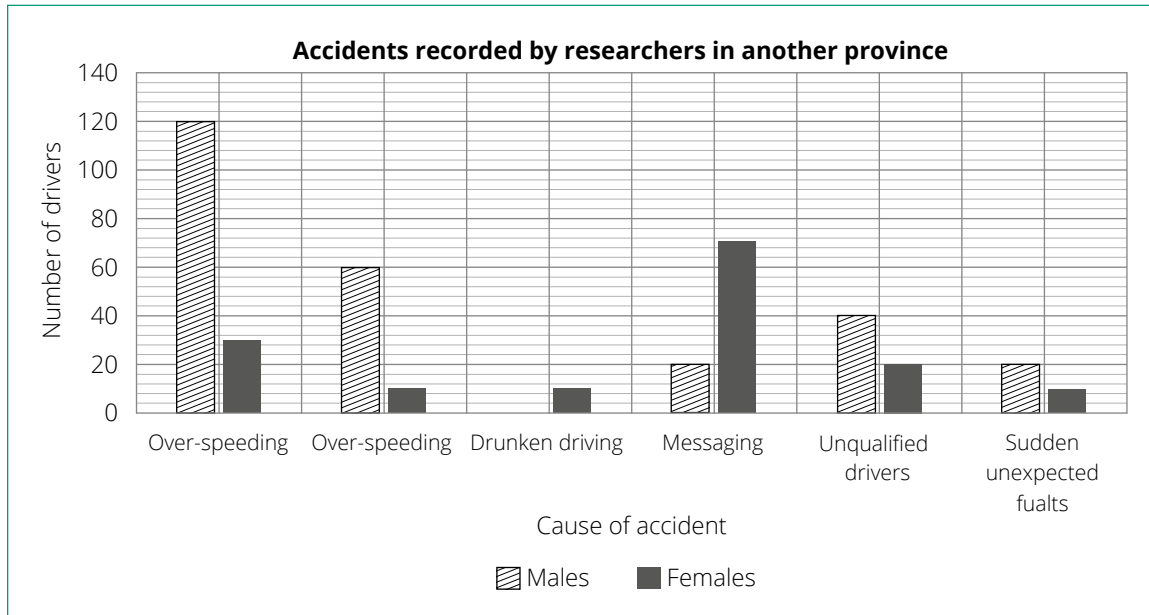
- 2.1.1 What is the relative frequency of accidents that occurred as a result of
 - a) over-speeding (2)
 - b) drunken driving? (2)
- 2.1.2 What is the probability of an accident occurring due to
 - a) messaging while on the road (2)
 - b) a fault in a vehicle? (2)
- 2.2 The researchers record their findings regarding accidents due to human error, namely, over-speeding (P), drunken driving (D), messaging while on the road (M) and unqualified drivers (Q), on a probability scale as shown below.



- 2.2.1 Determine the total number of accidents that were recorded caused by human error. (2)
- 2.2.2 What type of accident is most likely to be X? Use relevant calculations to show how you arrive at your answer. (2)
- 2.2.3 According to the findings, what is the main cause of accidents? (2)

Final Examination Paper 1

2.3 A researcher from another province records the causes of accidents using a bar graph. In total the accidents with male drivers were 380 and 150 with female drivers. Study the graph and answer the questions that follow.



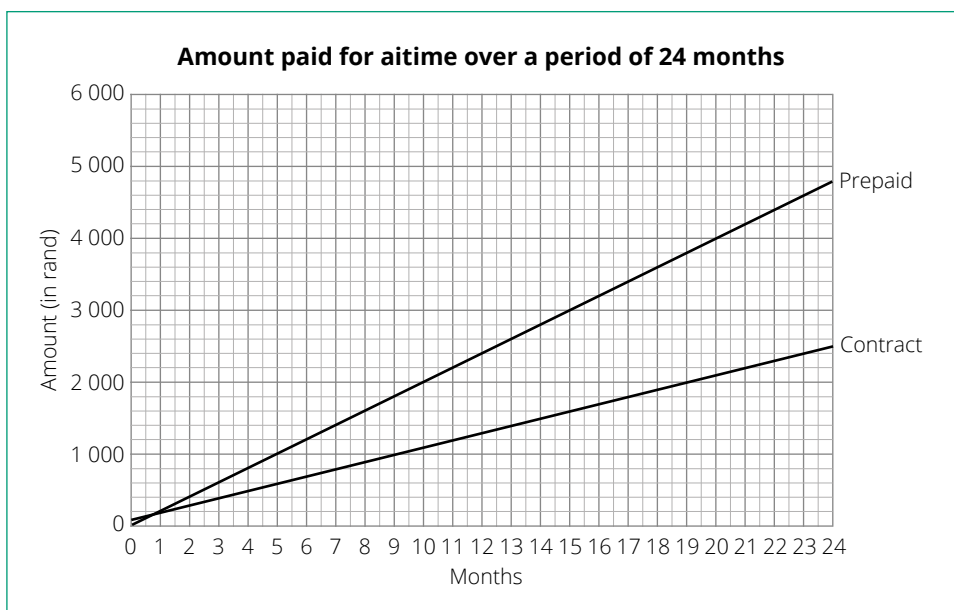
- 2.3.1 What type of graph is displayed above? (2)
- 2.3.2 Why was the graph chosen to represent the data? (2)
- 2.3.3 How many male drivers were in the accidents due to drunken driving? (3)
- 2.3.4 What was the largest cause of accidents in this province? (2)
- 2.3.5 What was the largest cause of accidents where the drivers were
 - a) males (2)
 - b) females? (2)
- 2.4 Determine the average number of accidents in the province where men were the drivers. (3)
- 2.5 People usually say that women are better drivers than men. Use two relevant measures of central tendency to justify this claim. (6)
- 2.6 Suggest two ways whereby the government can eliminate accidents in South Africa. (2)

[38]

Final Examination Paper 1

Question 3

- 3.1 A cellphone company can sell phones on prepaid and on contract terms.
- On prepaid terms, the handset valued at R6 000, is discounted by 10%. The customer is also given once-off airtime or data, valued at R400.
 - On contract terms, the customer is given a handset and they are supposed to pay a monthly instalment of R450 for two years. The company gives the customer a monthly airtime or data bundle valued at R100.
- 3.1.1 Calculate the actual amount you would pay for the handset only, if you choose the prepaid terms of payment. (4)
- 3.1.2 Determine the actual amount you would pay every month for the handset only, if you choose the contract option. (2)
- 3.1.3 How much in total would a customer pay for the handset only, if they choose the contract option? (3)
- 3.1.4 Calculate the monthly simple interest rate charged on the handset if a customer chooses to take the phone on contract terms. (6)
- 3.2 A customer draws the following graph to compare the airtime usage for a contract, with his normal monthly airtime usage on his prepaid terms. Study the graph and answer the following questions.



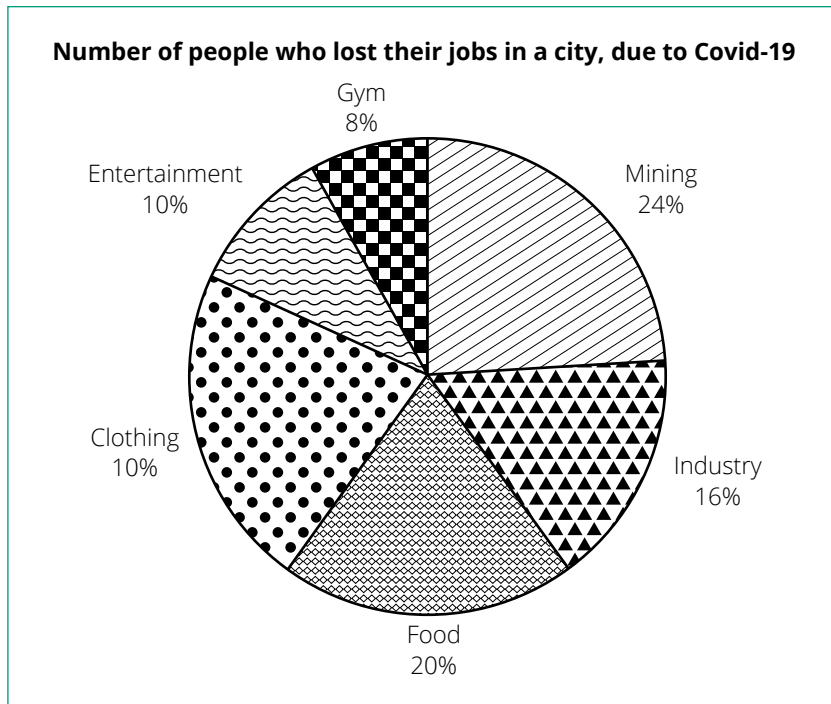
- 3.2.1 How much does the customer spend every month on the prepaid option? (3)
- 3.2.2 The customer, who is currently on prepaid terms, needs to top up the airtime given on contract, to his normal usage. How much more will he have paid in the 15th month? (3)

[21]

Final Examination Paper 1

Question 4

In a certain city, a councillor and his team of statisticians record the number of people who lost their jobs due to Covid-19. The results are shown in the following pie chart. Study the chart and answer the questions that follow it.



- 4.1 The number of people from the entertainment sector that lost their jobs was 500.
- 4.1.1 Calculate the total number of people who lost their jobs due to Covid-19, hence determine the number of people in each sector who lost their jobs. (8)
- 4.1.2 The percentage of people who worked in the platinum sector that lost jobs was 11%. The minister of energy said that this was more than 50% of those who worked in the industry sector. Justify or refute this claim using relevant calculations. (6)
- 4.2 The government dispatched aid relief amounting to R2 million to the community in the city. The total population in the city is 19 500 people. The average number in each household is 5 people.
- Each household was to receive 5 kg sugar, 10 kg maize meal, 12,5 kg rice, 10 kg beans and 5 kg cooking oil.
 - The prices of the items are indicated in the following table.

Item	Sugar	Maize meal	Rice	Beans	Cooking oil
Quantity	5 kg	10 kg	12,5 kg	10 kg	5 kg
Price in rand	45,00	51,00	80,00	60,00	87,00

Use relevant calculations to show whether the amount released by government is sufficient or not. (7)

[21]

TOTAL: 100

Final Examination Paper 2

Duration: 2 hours Total marks: 100

Final Examination Paper 2

Name:

Surname:

Instructions

1. Number your work according to the numbering system used in the question paper.
2. Show all calculations to be able to earn more marks.
3. Write all your answers in ink. Leave a line before writing a solution to the next question.
4. Round off the final answers appropriately according to the context, unless otherwise stated.
5. Please use the following annexure and answer sheets at the back of this question paper:
 - ANNEXURE A for Question 1
 - ANSWER SHEET 1 for Questions 2.5.3 and 2.5.4
 - ANSWER SHEET 2 for Question 3.2

Question 1

The map in ANNEXURE A shows the routes that can be taken from Cape Town to Johannesburg. Study the map and answer the questions that follow.

- 1.1 Name the road that you would take to travel from Johannesburg to Bloemfontein. (2)
- 1.2 Name the town that comes after Johannesburg as you travel to Bloemfontein. (2)
- 1.3 What road would you then take to Upington? (2)
- 1.4 In which direction is Cape Town from George? (2)
- 1.5 What is the distance from Upington to Bloemfontein (2)
- 1.6 Name the town that is nearest to Cape Town. (2)
- 1.7 Which place is furthest east among all places displayed on the map? (2)
- 1.8 Name two places on the map that are nearest to each other. (2)
- 1.9 Which place has the largest network of roads? (2)
- 1.10 Describe the shortest route from Johannesburg to George. (2)

[20]

Final Examination Paper 2

Question 2

Eric buys scones from a local bakery and resells them at a higher price. He buys a dozen scones for R20 and sells each scone at R4. Eric pays R2 000 per month for renting his premises. He also pays R200 for water and R300 for electricity.

- 2.1 Determine Eric’s total fixed monthly costs. (2)
- 2.2 How much does he get when he sells 1 dozen scones? (3)
- 2.3 Write an equation (in terms of dozens) he can use to calculate his:
 - 2.3.1 total monthly costs (2)
 - 2.3.2 monthly income. (2)
- 2.4 In the previous month, he sold 252 dozen scones. Determine whether he made a profit or a loss. (6)
- 2.5 The following table shows the possible sales he can make as he investigates his break-even point.

Number of dozens sold	0	50	100	200	300
Total costs (R)	2 500	3 500	M	6 500	8 500
Total income (R)	0	2 400	4 800	N	14 400

- 2.5.1 Explain what is meant by a break-even point in the business context. (2)
- 2.5.2 Determine the values of M and N. (4)
- 2.5.3 Use the same system of axes provided in ANSWER SHEET 1, to plot a graph to compare the income and total costs with the number of scones sold. (7)
- 2.5.4 On the graph:
 - a) Show the region showing a profit in Eric’s business (2)
 - b) Indicate the break-even point and determine the number of dozens of scones he must sell to break even. (2)

[32]

Final Examination Paper 2

Question 3

Kim stays in a complex in Johannesburg. He has a prepaid electricity meter. Each month, he uses less than 500 kWh electricity. Kim gets a monthly water bill from the municipality. The municipality uses the tariffs shown in the table to determine the amount of money an individual must pay for water used. Kim obtains a statement for his average water and electricity usage per day to determine how much he would pay. He finds out that he would use an average of 720 ℓ water and 3 kWh electricity.

WATER TARIFFS FOR GAUTENG PROVINCE

Block	Volume	Water rates
1	0 kℓ – 6 kℓ	Free
2	> 6 kℓ – 10 kℓ	7,14
3	> 10 kℓ – 15 kℓ	12,07
4	> 15 kℓ – 20 kℓ	17,65
5	> 20 kℓ – 30 kℓ	24,03
6	> 30 kℓ – 40 kℓ	25,81
7	Above 40 kℓ	32,27

All rates are exclusive of VAT, calculated at a rate of 15%

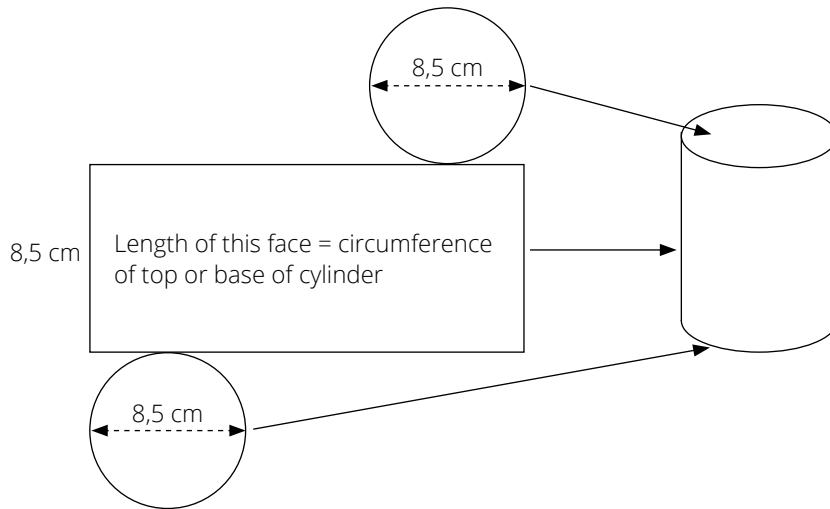
- 3.1 Determine:
 - 3.1.1 the amount of electricity Kim would use in a month of 30 days (2)
 - 3.1.2 the amount (in rand), excluding VAT, that he would pay to buy electricity for a month of 30 days if 1 kWh costs 116,16 cents, excluding VAT. (4)
- 3.2 Calculate:
 - 3.2.1 the total amount of water, to the nearest kilolitre, he uses in every month of 30 days. (4)
 - 3.2.2 the amount he must pay for the water used. Use the table above to complete TABLE 1 in ANSWER SHEET 2. (5)
- 3.3 Calculate the total amount, including 15% VAT, that Kim paid for water and electricity that month. (5)
- 3.4 Kim is currently paying more because VAT was increased from 14% to 15%. Will the amount of electricity he uses drop by more than 1 kWh? (6)

[26]

Final Examination Paper 2

Question 4

- 4.1 A coffee processing company wants to introduce a new brand of coffee. The coffee powder will be packaged in tins that will be specially made from two circular and one rectangular piece of tin foil as illustrated below.



The following formulae may be used:

Circumference of a circle = $2 \times \pi \times \text{radius}$

Area of a rectangle = length \times breadth

Area of a circle = $\pi \times \text{radius}^2$

Volume of a cylinder = $\pi \times \text{radius}^2 \times \text{height}$

Surface area of a cylinder = $2 \times \pi \times \text{radius} (\text{radius} + \text{height})$

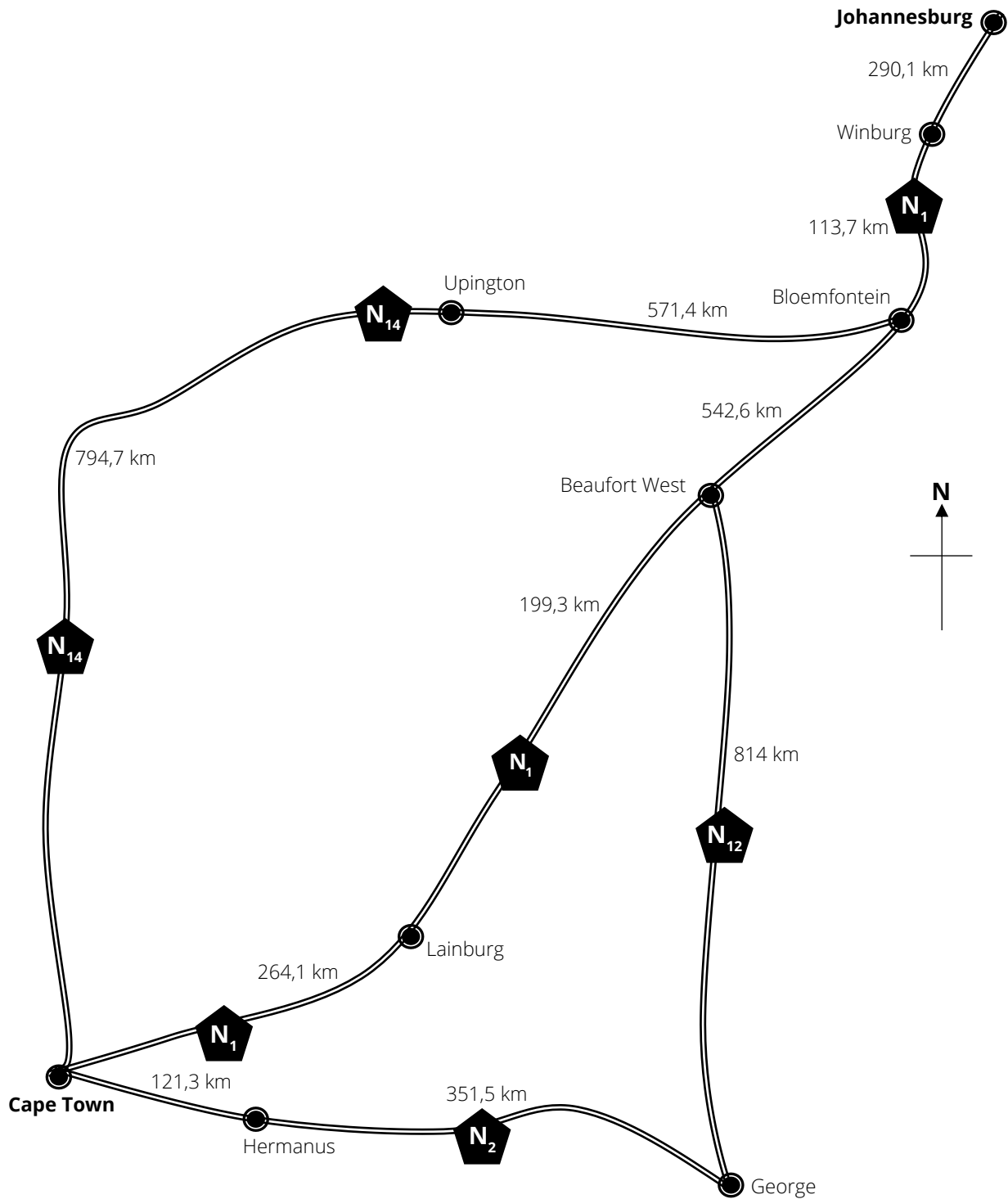
- 4.1.1 Determine the length of the branding paper if it will have an extra length of 1 cm for glueing it onto the curved surface of the tin. (3)
- 4.1.2 Calculate the area of the branding paper. (4)
- 4.1.3 The weight of the material used to make the branding paper is 0,04 kg per 10 000 cm² area. Determine the weight of the branding paper in grams. (5)
- 4.2 The tin will only be filled up to 85% of its total capacity, to provide for space for expansion. They say you can use a maximum amount of 400 cm³ of coffee.
- 4.2.1 Determine whether this quantity of coffee can be packaged in the tin or not. (7)
- 4.2.2 65,25 cm³ of coffee weighs 50 g. Determine the net weight of the coffee in the tin when it is filled. (3)

[22]

TOTAL: 100

ANNEXURE A

Question 1



Final Examination Paper 2

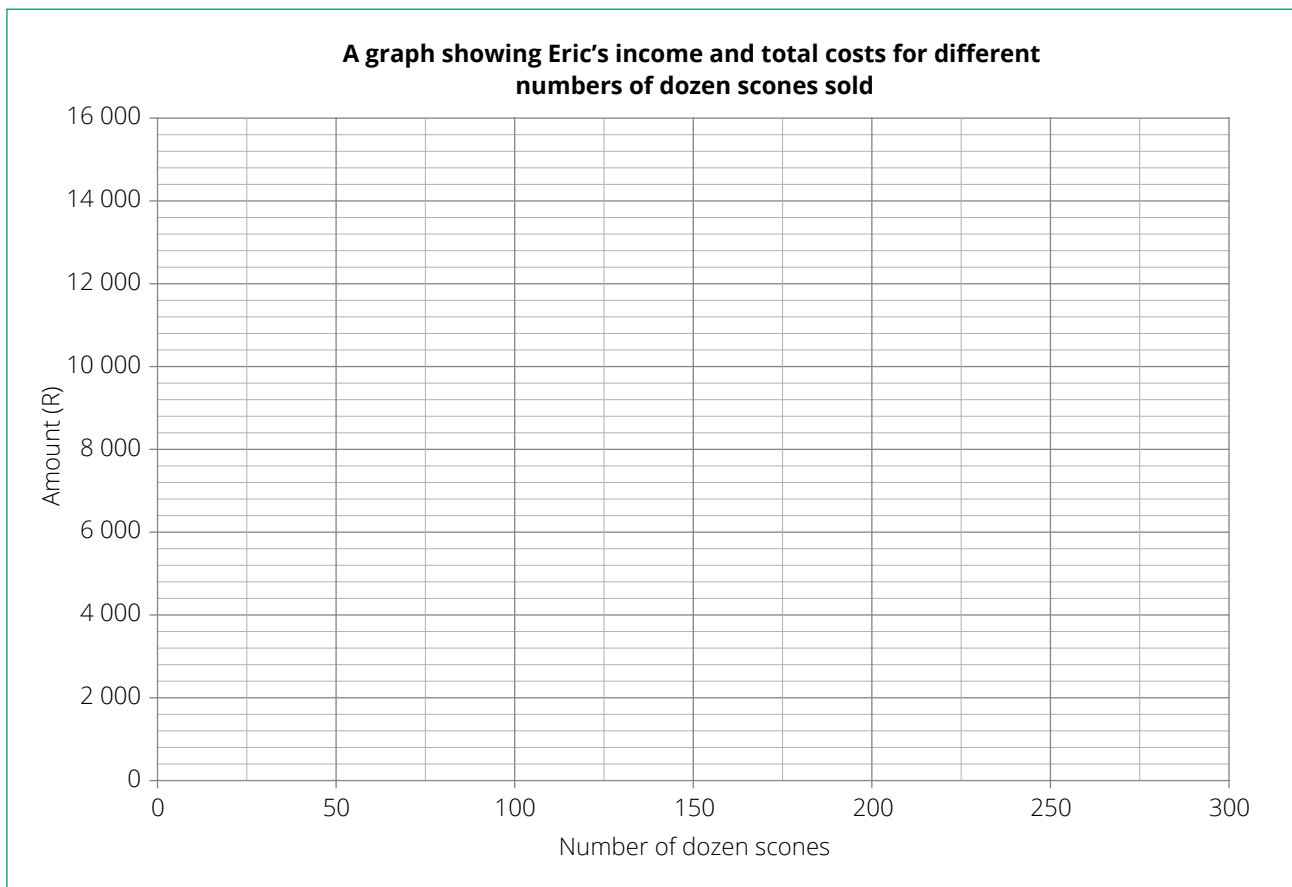
ANSWER SHEET 1

Name:

Surname:

Grade:

For Questions 2.5.3 and 2.5.4



Final Examination Paper 2

ANSWER SHEET 2

Name:

Surname:

Grade:

For Question 3.2

TABLE 1:

Block	Volume used (kℓ)	Amount (R)
1		
2		
3		
4		
TOTAL		

Final Examination Paper 1 Memorandum

Duration: 2 hours Total marks: 100

Final Examination Paper 1 Memorandum

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RG	Reading from graph
SF	Correct substitution in a formula
O	Opinion
P	Penalty for incorrect units/ incorrect rounding off
NP	No penalty

QUESTION 1				
	SOLUTION	MARKS	EXPLANATION	TL
1.1	1.1.1 R10 000 ✓	(2)	2CA Answer	1
	1.1.2 R10 000 ✓	(2)	2CA Answer	1
	1.1.3 75 pairs ✓	(2)	2CA Answer	1
1.2	1.2.1 200 pairs ✓	(2)	2CA Answer	1
	1.2.2 Break-even ✓	(2)	2CA Answer and units	1
1.3	1.3.1 A and B ✓✓	(2)	CA Answer	1
	1.3.2 D ✓✓	(2)	CA Answer	1
	1.3.3 A ✓✓	(2)	2CA Answer	1
1.4	They should sell more/ attract more customers ✓✓	(2)	2O Suggestion	1
1.5	Pamela would make a loss ✓✓	(2)	CA Answer	1
				[20]

QUESTION 2				
	SOLUTION	MARKS	EXPLANATION	TL
2.1	2.1.1 a) Relative frequency of accident due to over-speeding $= \frac{112}{514} = \frac{56}{257}$ or 21,79% or 0,22 ✓✓	(2)	2CA Answer	1
	b) Relative frequency of accident due to drunken driving $= \frac{157}{514}$ or 30,54% or 0,31 ✓✓	(2)	2CA Answer	2
	2.1.2 a) $P(M) = \frac{43}{514}$ or 8,37% or 0,084 ✓✓	(2)	2CA Answer	2
	b) $P(\text{Fault}) = P(U) + P(S)$ $\frac{111}{514} + \frac{19}{514} = \frac{120}{514} = \frac{60}{257}$ or 23,35% or 0,233 ✓✓	(2)	2CA Answer	2
2.2	2.2.1 Accidents by human error = 112 + 157 + 43 + 72 ✓ = 384 cases ✓	(2)	1MA Adding 1CA Answer	2
	2.2.2 Drunken driving $\left(\frac{157}{384}\right)$ ✓✓	(2)	2CA Answer	2
	2.2.3 Driving when the driver is drunk/ drunken driving ✓✓	(2)	2O Explanation	2

Final Examination Paper 1 Memorandum

2.3	2.3.1 Double bar graph ✓✓	(2)	2CA Answer	1
	2.3.2 Because the data about accidents is discrete ✓✓	(2)	2O Explanation	1
	2.3.3 Drunken driving = $380 - (120 + 60 + 20 + 40 + 20)$ ✓ = 120 males ✓	(3)	1MA Calculation 1CA Answer	2
	2.3.4 Over-speeding ✓✓	(2)	1CA Answer	1
	2.3.5 (a) Over-speeding/ Drunken driving ✓✓	(2)	1CA Answer	1
	(b) Messaging ✓✓	(2)	1CA Answer	1
2.4	Average for men = $\frac{380}{6}$ ✓ = 63,33 ✓ = 63 men ✓	(3)	1MA Dividing by 6 1 CA Answer 1RG Rounding	2
2.5	Average for men = $\frac{380}{6}$ ✓ = 63,33 ✓ = 63 men ✓ Average for women = $\frac{150}{6}$ ✓ = 25 women ✓ Mode = 120 men and 20 women ✓ Median for men is 50 and for women is 15. The mean, ✓ mode and media for men are higher, indicating that men are more involved in accidents than women. The claim is correct. ✓	(6)	1 CA Answer 1RG Rounding 1CA getting 25 1CA Getting mode 2O Explanation	4
2.6	- Introduce speed humps ✓ - More traffic cops ✓ - Introduce speed cameras on the roads ✓	(2)	2O Any two opinions	2

[38]

QUESTION 3

	SOLUTION	MARKS	EXPLANATION	TL
3.1	3.1.1 Discount = $10\% \times R6\ 000 = R600$ ✓ Actual payment = $R6\ 000 - (R400 + R600)$ ✓✓ = $R5\ 000$ ✓	(4)	1CA Discount 2M Subtracting 1CA Difference	3
	3.1.2 Payment (per month) for the handset = $R450 - R100$ = $R350$ ✓	(2)	1M Subtraction 1CA Difference	2
	3.1.3 Total payment = $R350 \times 2 \times 12$ months ✓✓ = $R8\ 400$ ✓	(3)	1M Multiplying 1CA Answer	2
	3.1.4 Cash price = $R5\ 000$ Contract = $R8\ 400$ Interest = $R8\ 400 - R5\ 000$ ✓ = $R3\ 400$ ✓ Annual interest = $R3\ 400 \div 2 = R1\ 700$ ✓ Annual interest rate = $\frac{R1\ 700}{R5\ 000} \times 100\%$ ✓ = 34% ✓ Monthly interest rate = $34\% \div 12$ ✓ = $2,83\%$ ✓	(6)	1MA Subtraction 1CA Difference 1CA Annual interest 1CA Annual interest rate 1M Dividing by 12 1CA Percentage	3
3.2	3.2.1 Monthly payment = $\frac{\text{Cumulative amount}}{\text{number of months}}$ = $R3\ 000/15$ months ✓✓ = $R200$ (any amount ÷ corresponding number of months)	(3)	2MA Dividing by 15 1CA Answer	2
	3.2.2 Extra per month = $R100$ Amount after 15 months = $R100 \times 15$ months ✓✓ = $R1\ 500$ ✓	(3)	1MA Multiplying by 12 1CA Answer	2

[21]

Final Examination Paper 1 Memorandum

QUESTION 4				
	SOLUTION	MARKS	EXPLANATION	TL
4.1	4.1.1 10% = 500 people $100\% = \frac{100 \times 500}{10} = 5000$ people ✓ Clothing = $\frac{22}{100} \times 5\,000$ people = 1 100 people ✓ Food = $\frac{20}{100} \times 5\,000$ people = 1 000 people ✓ Industry = $\frac{16}{100} \times 5\,000$ people ✓ = 800 people ✓ Mining = $\frac{24}{100} \times 5\,000$ people = 1 200 people ✓ Gym = $\frac{8}{100} \times 5\,000$ people ✓ = 400 people ✓	(8)	8 CA 1 mark for each category's number of people	3
	4.1.2 Miners = 1 200 people ✓ $\frac{11}{100} \times 1\,200$ people = 132 people ✓ Industry = 800 people ✓ $\frac{50}{100} \times 800$ people = 400 people ✓ 132 people are fewer than 400 people. The minister's statement is incorrect. ✓✓	(6)	6 CA 1 mark for each category's number of people	4
4.2	Number of households = $\frac{19\,500}{5} = 3\,900$ households ✓ Amount for each home = R45 + R51 + R80 + R60 + R87 = R323 ✓✓ Total amount given = R323 × 3 900 households ✓ = R1 259 700 ✓ This amount is less than R2 million released by government. Therefore the money released is sufficient. ✓	(7)	1MA Number of households 2MA Amount per household 2MA Amount given 1CA Total amount 1O Explanation	4
[21]				

Final Examination Paper 2 Memorandum
Duration: 2 hours Total marks: 100
Final Examination Paper 2 Memorandum

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RG	Reading from graph
SF	Correct substitution in a formula
O	Opinion
P	Penalty for incorrect units/ incorrect rounding off
NP	No penalty

QUESTION 1				
	SOLUTION	MARKS	EXPLANATION	TL
1.1	N1 ✓✓	(2)	A2 Answer	1
1.2	Winburg ✓✓	(2)	A2 Answer	1
1.3	N14 ✓✓	(2)	A2 Answer	1
1.4	West ✓✓	(2)	A2 Answer	1
1.5	571,4 km ✓✓	(2)	A2 Answer and units	1
1.6	Hermanus ✓✓	(2)	A2 Answer	1
1.7	Johannesburg ✓✓	(2)	A2 Answer	1
1.8	Bloemfontein and Winburg ✓✓	(2)	A2 Answer	1
1.9	Cape Town ✓✓	(2)	A2 Answer	1
1.10	Use N1 in the southerly direction, from Johannesburg, ✓ through Winburg, Bloemfontein, Beaufort West. ✓	(2)	A2 Answer	1
				[20]

QUESTION 2				
	SOLUTION	MARKS	EXPLANATION	TL
2.1	Eric's total fixed monthly costs R2 000 + R300 + R200 ✓ = R2 500 ✓	(2)	1M Adding 1A Answer with units	2
2.2	1 dozen = 12 cakes Amount = R4 × 12 cakes ✓✓ = R48	(3)	1C 1 dozen = 12 1M multiplying 1CA Answer	2
2.3	2.3.1 Total monthly costs = R2 500 + R20 × Number of dozens ✓✓	(2)	2A Formula	2
	2.3.2 Monthly income = R48 × number of dozens sold ✓✓	(2)	2A Formula	2
2.4	Total income = R48 × 252 dozens = R12 096 ✓ Total costs = R2 500 + R20 × 252 ✓ = R7 540 ✓ Profit = R12 096 – R7 540 ✓ = R4 556 ✓ She made a profit of R4 556 ✓	(6)	1M Multiplying 1CA Correct answer 1M Add costs 1CA Correct answer 1M Subtracting 1CA Correct answer	4

Final Examination Paper 2 Memorandum

2.5	2.5.1 When the income and the total expenses are the same✓✓	(2)	2O Explanation	1
	2.5.2 $M = R2\,500 + R20 \times 100 \text{ dozens} \checkmark$ $= 4\,500 \checkmark$ $N = R48 \times 200 \text{ dozens} \checkmark$ $= R9\,600 \checkmark$	(4)	1M Adding costs 1CA Answer 1M Multiplying by 48 1CA Answer CA Answer only full marks	2
	2.5.3 ANSWER SHEET 1 <p style="text-align: center;">A graph showing Eric's income and total costs for different numbers of dozen scones sold</p> <p style="text-align: center;">Amount (R)</p> <p style="text-align: center;">Number of dozen scones</p>	(7)	1M Adding 1A Answer with units	3
	2.5.3 See graph above for point allocation	(7)		
	2.5.4 a) See graph above for point allocation b) Number of dozens she must sell to break-even = 90 dozens ✓✓	(2) (2)	2RG Answer	1

[32]

QUESTION 3				
	SOLUTION	MARKS	EXPLANATION	TL
3.1	3.1.1 Amount of electricity used in a month of 30 days = 3 kWh × 30 days ✓ = 90 kWh ✓	(2)	1M Multiply by 30 1CA Answer	
	3.1.2 Monthly cost = 90 kWh × 116,16 cents ✓ = 10 454,4 cents ✓ = 10 454,4 ÷ 100 ✓ = R104,54 ✓	(4)	2MA Amount in cents 1C Converting to rand 1CA Answer	2
3.2	ANSWER SHEET 2 3.2.1 Amount of water Kim uses = 720 ℓ × 30 days ✓ = 21 600 ℓ ✓ = 21 600 ÷ 1 000 kℓ ✓ = 21,6 kℓ ≈ 22 kℓ ✓	(4)	1MA Getting water used 1C Conversion 1RG	2

Final Examination Paper 2 Memorandum

	<p>3.2.2 ANSWER SHEET 2 TABLE 1</p> <table border="1" data-bbox="306 331 1002 573"> <thead> <tr> <th>Block</th> <th>Volume used (kℓ)</th> <th>Amount (R)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>6</td> <td>6 kℓ × R0,00 = R0,00 ✓</td> </tr> <tr> <td>2</td> <td>4</td> <td>4 kℓ × R7,14 = R28,56 ✓</td> </tr> <tr> <td>3</td> <td>5</td> <td>5 kℓ × R12,07 = R60,35 ✓</td> </tr> <tr> <td>4</td> <td>7</td> <td>7 kℓ × R17,65 = R123,65 ✓</td> </tr> <tr> <td>TOTAL</td> <td>22</td> <td>212,46 ✓</td> </tr> </tbody> </table> <p>Amount excluding VAT = R212,46</p>	Block	Volume used (kℓ)	Amount (R)	1	6	6 kℓ × R0,00 = R0,00 ✓	2	4	4 kℓ × R7,14 = R28,56 ✓	3	5	5 kℓ × R12,07 = R60,35 ✓	4	7	7 kℓ × R17,65 = R123,65 ✓	TOTAL	22	212,46 ✓	(5)	<p>1 MA Multiplying to get water used per block (4 Marks) 1CA Total</p>	3
Block	Volume used (kℓ)	Amount (R)																				
1	6	6 kℓ × R0,00 = R0,00 ✓																				
2	4	4 kℓ × R7,14 = R28,56 ✓																				
3	5	5 kℓ × R12,07 = R60,35 ✓																				
4	7	7 kℓ × R17,65 = R123,65 ✓																				
TOTAL	22	212,46 ✓																				
3.3	<p>Total amount = R104,54 + R212,46 ✓ = R317 ✓ Amount including VAT = R317 + $\frac{15}{100} \times R317$ ✓✓ = R364,55 ✓</p>	(5)	<p>1MA Adding 1CA Answer 1MA Calculating VAT 2CA Amount with VAT</p>	3																		
3.4	<p>15% × R104,54 = R15,681 14% × R104,54 = R14,6356 ✓ R15,681 – R14,6356 = R1,0454 ✓ = 1,0454 × 100 cents ✓ = 104,54 cents ✓ Amount of electricity = 104,54 ÷ 116,16 ✓ = 0,9 kWh ✓ No, the amount of electricity Kim uses dropped by less than 1KWH</p>	(6)	<p>1MA 14% VAT 1MA Subtracting 1C Conversion to cents 1 CA Answer in cents 2CA Electricity used</p>	3																		
[26]																						
QUESTION 4																						
	SOLUTION	MARKS	EXPLANATION	TL																		
4.1	<p>4.1.1 Length of branding paper = Circumference + 1 cm = $2 \times 3,142 \times \frac{8,5}{2} + 1$ ✓ = 26,71 + 1 ✓ = 27,71 cm ✓</p>	(3)		3																		
	<p>4.1.2 Area of branding paper = length × breadth ✓ = 27,71 cm × 8,5 cm ✓ = 235,535 cm² ≈ 235,54 cm² ✓</p>	(4)		2																		
4.1	<p>4.1.3 10 000 cm² weighs 0,4 kg. ✓ 235,54 cm² weigh = $\frac{235,54 \times 0,4}{10\ 000}$ ✓ = 0,0094216 kg ✓ = 0,0094216 × 1 000 g ✓ = 9,42 g ✓✓</p>	(5)		3																		
4.2	<p>4.2.1 Volume of tin = $3,142 \times \left(\frac{8,5}{2}\right)^2 \times 8,5$ ✓ = 482,4 cm³ ✓ 85% × 482,4 cm³ = 410,04 cm³ ✓✓ The volume of the tin is more than the volume of the coffee it is supposed to contain. ✓ Therefore, the tin is sufficient for the coffee ✓</p>	(7)		4																		
	<p>4.2.2 65,25 cm³ weighs 50 g 410,04 cm³ weighs $\frac{410,04 \times 50}{65,25}$ ✓ = 314,21 g ✓✓</p>	(3)		2																		
[22]																						

Notes

A series of horizontal dotted lines for writing notes.

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