MATHEMATICAL LITERACY
COMPLETE REVISION
AND
PRACTICE SSIP:
NSC EXAM KIT 2020

MGSLG

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PREAMBLE

This document is the result of the Just in Time Secondary School Intervention Programme (JIT SSIP) which is an intervention programme for FET teachers in the Gauteng Department Education (GDE) in collaboration with Matthew Goniwe School of Leadership and Governance (MGSLG).

AIMS AND OBJECTIVES

- To assist educators and learners to prepare for NSC Exams
- To provide learners with practice questions, typical exam questions and exam tips

MATHEMATICAL LITERACY

- There are two externally set examination papers in grade 12
- **Objective of each paper:**
  - **Paper 1** is a basic skills paper assessing **Application Topics**: Finance; Measurement; Maps, Plans and Other representations of the physical world; Data Handling and Probability.
  - **Paper 2** is an application paper assessing integration of application topics (Refer to Page 54)

PAPER 1

STRUCTURE OF PAPER 1 QUESTION PAPER

- It is a 3-hour long paper, with a total mark allocation of 150.
- The paper has **Five questions**:

Question 1	- Short context - Approximately 30 marks questions
Question 2	- Finance - Approximately 40 to 45 marks
Question 3	- Measurement - Approximately 25 marks
Question 4	- Maps, Plans and Other Representations of the Physical World - Approximately 15 marks
Question 5	- Data Handling - Approximately 30 marks
NB: **Probability** will be integrated with **Application Topics**	

SECTION 1

QUESTION 1

- **Overview**
  - **Question 1** tests Cognitive Level 1 questions
  - All Application Topics will be assessed

- **Exam Tips**

- Explain or Define meaning of terms (terminology)
- Read off information directly from given graph or table or diagram
- Measure accurately using an instrument e.g. ruler
- Sort or Arrange data accordingly
- Rounding off answers approximately as per given instruction
- Conversion of metric units (one dimension)

Practice Questions

PART ONE OF QUESTION 1: Adapted from 2019 KZN Prelim Paper 1

1.1.

Zipho bought 50 stick sweets in a packet. The cost price of one packet is R38,00. He sells each stick sweet at R1,10.

Use the information above to answer the questions that follow

1.1.1 Calculate the cost price of one stick sweet (2)

1.1.2 Calculate the profit from one stick sweet. (2)

1.1.3 Calculate the price of a dozen packets of stick sweets from the shop (2)

1.2.

The caterer mixes juice in a 20-litre bucket. Each glass holds 200 ml of juice. Juice was served to the guests attending the party. Juice was finished from the bucket. Each person drank one glass of juice.
Note: 1 litre = 1 000 millilitres

Use the information above to answer the questions that follow

1.2.1 Convert 20 litres to millilitres. (2)

1.2.2 Write the capacity of the glass to the capacity of a 20-litre bucket as ratio in simplified form. (2)

1.2.3 Determine the numb of people who attended the party if they all drank juice (2)

1.3.

The disc jockey (DJ) brought CDs of various genre to play at the party. The number of CDs per genre are as follows:

• 5 R & B	• 10 House	• 3 Hip hop	7 Maskandi	3 Kwaito

Use the information above to answer the questions that follow

1.1 Determine the number of CDs brought to the party (2)

1.2 Define the term *outcome* as it is used in probability (2)

1.3 What is the percentage chance that a jazz music CD can be picked from DJ's collection? (2)

1.4.

There are two types of showing a scale on a map and both are shown alongside.	**Two Scale Formats** 0 50 100.....200km 1:9 000 000

Use the information above to answer the questions that follow

1.4.1 Name the two types of scales shown above. (2)

1.4.2 Explain what the scale 1:9 000 000 means. (2)

End of Practice Questions

SOLUTIONS

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from a table/ graph/ diagram/map
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example/Explanation
J	Justification
R	Rounding off
F	deriving a formula
AO	Answer only full marks
P	Penalty e.g. for units, incorrect rounding off etc.
NPR	No penalty for rounding / units

Practice Question Solutions

1.1.1	Cost price = $\frac{R38,00}{50}$ ✓MA = R0,76 ✓A **OR** 76c	**1.3.2**	Outcome means a possible result after an event or events. ✓O
1.1.2	Profit = R1,10 – R0,76 ✓M = R0,34 ✓CA **OR** 34c	**1.3.3.**	P (jazz CD) = 0% ✓✓A
1.1.3	Cost price = R38,00 × 12 ✓M = R456,00 ✓CA or 45 600c	**1.4.1**	Bar scale/Linear scale ✓A Number scale/Ratio scale ✓A
1.2.1	20 litres × 1 000 ✓C = 20 000 ml ✓A	**1.4.2**	One unit on the map/paper represents nine million units in reality. ✓✓E
1.2.2	glass capacity: bucket capacity 200 ml : 20 × 1 000 ✓S 200 : 20 000 ✓MA 1 : 100 ✓CA	**1.5.1**	Bidvest Wits ✓✓RT
1.2.3	Number of people = 100 ✓✓A	**1.5.2**	Modal number of points = 29 ✓✓ RT
1.3.1	Number of CDs = 5 +10+3+7+3 ✓MA = 28 ✓A	**1.5.3**	Total matches = 21 +21 +19 + 20 +21 +21 +21 +20 + 21 + 21 + 21 + 21 + 20 + 21 + 20 + 21 ✓MA = 330 ✓CA
		1.5.4	Minimum = 14 ✓A Maximum = 38 ✓A

Exam Type Questions: Possible Question 1's in Paper 1

PART ONE OF QUESTION 1: Adapted from 2019 June Paper 1

1.1. In 2019/2020 the South African government increased the social grants as indicated in TALE 1 below.

TABLE 1: SOCIAL GRANTS FOR 2019-2020

TYPES	MARCH 2019	MARCH 2020
Pension allowance younger than 75	$R1\,695$	$R1\,780$
Pension allowance older than 75	$R1\,715$	$R1\,800$
War veteran allowance	$R1\,715$	$R1\,800$
Disability allowance	$R1\,695$	$R1\,780$
Foster care allowance	$R960$	$R1000$
Care dependent allowance	$R1\,695$	$R1\,780$
Child support allowance	$R405$	$R425$

[Adapted from www.treasury.gov.za/Rapport]

Use TABLE 1 above to answer the questions that follow:

1.1.1. Is the type of data in TABLE 1 numerical or categorical data? (2)

1.1.2 Identify the modal allowance amount for March 2020. (2)

1.1.3 Arrange the social grants for March 2019 in descending order of value. (2)

1.1.4 Determine (In rands) the increase in the disability allowance for March 2020. (2)

1.1.5 Write down the type(s) of allowances which represents the highest amount in March 2020 (2)

1.2. Naomi owns a spaza shop in Gugulethu. She buys her stock from a wholesaler in Cape Town. Below is some of the stock that she buys weekly

2,5 kg Hullets white sugar Cost Price : $R32{,}99$ Total selling price: $R42{,}90$	$400g$ Koo chakalaka Cost Price: R10,99 Total Selling Price: $R14{,}30$	$2\ kg$ Tastic rice Cost Price: $R22{,}99$ Total Selling Price:$R29{,}90$

Use the Information above to answer the questions that follow.

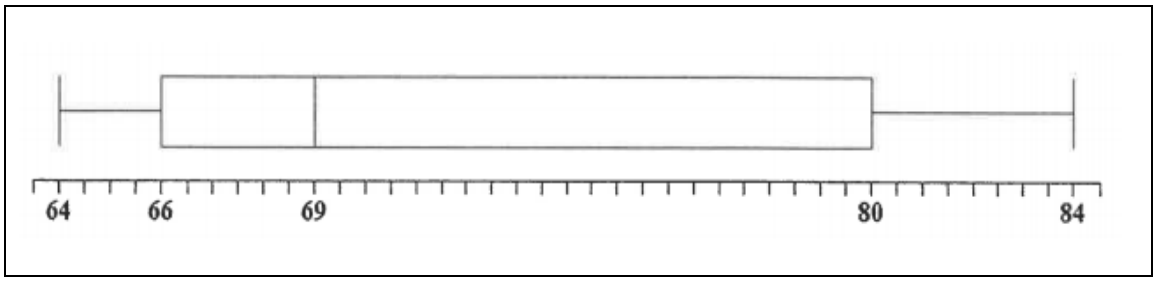
1.2.1. Convert $400g\ to\ Kg$. (2)

1.2.2 Determine the Profit she will make if she sells a can of Chakalaka. (3)

1.2.3 She buys a $2{,}5\ kg$ pack of white sugar and repacks the sugar into $250\ g$ packets.Determine how many packets she will be able to get from ONE pack of $2{,}5\ kg$ sugar. (3)

1.2.4 The $2\ kg$ Tastic rice is divided into 8 smaller packets. Calculate the selling price of ONE small packet. (2)

1.3. Candidates sat for the National Senior Certificate examinations in November 2018. The box-and-whisker plot below shows the five-number summary of the average pass percentage for Mathematical Literacy.



Use the box-and-whisker plot above to answer the questions that follow.

1.3.1. Write down the pass percentage that represents the following:
a) The Median (2)
b) Quartile 3 (2)

1.3.2. Determine the difference between the highest and the lowest pass percentage. (2)

1.4. Kimberley experienced heavy thundershowers on 11 March 2019. Celeste, a resident of Kimberley, studied the weather forecast below relating to the following day to determine whether it was necessary to take an umbrella to work.

HOURLY WEATHER FORECAST FOR KIMBERLEY-12/03/2019

13:00	14:00	15:00	16:00	17:00
29°C	29°C	29°C	28°C	26°C
N	NNW	NNW	NNW	NW
20%	20%	20%	37%	64%

Use the Information above to answer the questions that follow:

1.4.1. At what time of the day is the temperature expected to be 28°C ? (2)

1.4.2. Determine the Probability that it will rain when Celeste leaves work at 2:30 p.m. (2)

[30]

END OF QUESTION 1 PART ONE

PART TWO OF QUESTION 1: Adapted from 2019 Feb/Mar NSC Paper 1

1.1.

ANNEXURE A below shows a revolving credit loan taken out from Woolworths Financial Services.

NOTE:

A revolving credit plan is a loan where a person can re-use all or part of the money that has been paid back towards the loan without applying for it again.

WOOLWORTHS FINANCIAL SERVICES

SUSAN VISSER **PO BOX 271** **KIMBERLEY** **8300**	**STATEMENT DATE** — **14 Jan 2017** **PAYMENT DUE DATE** — **8 Feb 2017** **ACCOUNT NUMBER** — **6007 585 **** ****** **INSTALMENT FREQUENCY** — **Monthly**

LOAN STATEMENT

TRANSACTION DETAILS

DATE	STORE	DESCRIPTION		AMOUNT
30 Dec 2016	Head Office	Debit order payment		443,27 CR
14 Jan 2017	Head Office	Monthly account fee		38,00
14 Jan 2017	Head Office	Total interest		221,82
		Fees and insurance		
		Opening balance	35,00	
		Payment	35,00-	
		Closing balance	38,00	
		Loan taken on 09/10/2015 over 36 months		
		Opening balance	2 658,20	
		Interest charged	55,05	
		Payments	153,46-	
		Closing balance	2 559,79	
		Loan taken on 29/04/2016 over 60 months		
		Opening balance	6 859,99	
		Interest charged	144,04	
		Payments	221,89 -	
		Closing balance	**A**	
		Loan taken on 10/10/2016 over 60 months		
		Opening balance	1 081,89	
		Interest charged	22,73	
		Payments	32,92-	
		Closing balance	1 071,70	
		Outstanding loan balance		10 451,63
		Loan amount available		548,37
		Next instalment due		446,27

Use ANNEXURE A to answer the questions that follow.

1.1.1. Identify the borrower of the revolving credit loan. (2)
1.1.2. Write down the loan amount available on this statement. (2)
1.1.3. Write down the number of statements the borrower will receive in ONE year. (2)
1.1.4. Explain the term debit order. (2)
1.1.5. Calculate the number of days from the statement date to the payment due date. (2)
1.1.6. Calculate the closing balance (A) of the loan taken on 29/04/2016. (2)

1.2. The weather forecast for Cape Town for the period 1 to 9 June 2017 is shown below.

MON.	TU.	WED.	TH.	FRI.	SAT.	SUN.
			1	2	3	4
						
			19 °C	26 °C	22 °C	21 °C
			9 °C	7 °C	11 °C	6 °C
5	6	7	8	9		
						
20 °C	14 °C	15 °C	15 °C	16 °C		
9 °C	9 °C	7 °C	3 °C	8 °C		

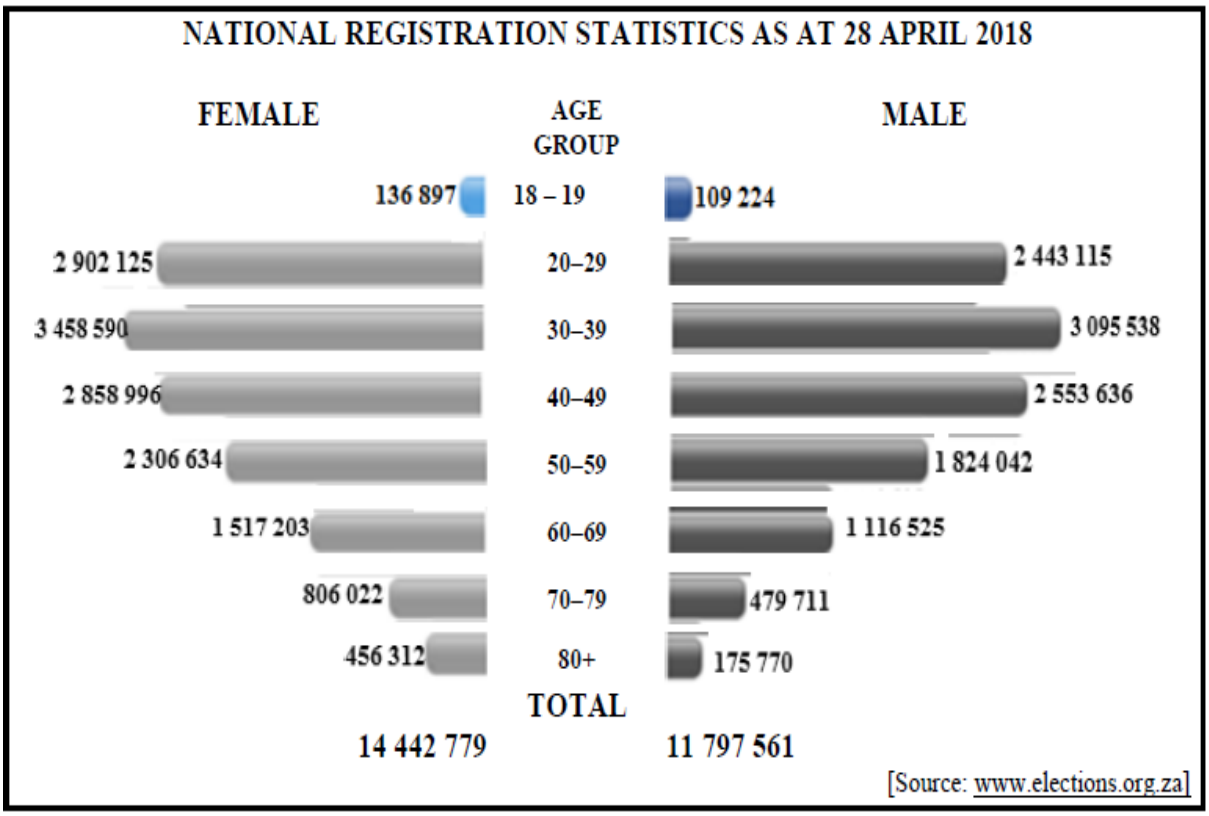
KEY	
	Sunny
	Cloudy
	Rain
	Rain and lightning
35 °C	Max. temp.
7 °C	Min. temp.

[Source: www.wunderground.com]

Study the information above and answer the questions that follow.

1.2.1. Identify the maximum temperature for Friday 2 June 2017. (2)
1.2.2. Write down the full date on which the lowest minimum temperature was measured. (2)
1.2.3. Arrange the maximum temperatures in descending order. (2)
1.2.4. Determine the date when there was rain and lightning. (2)
1.2.5. Determine the difference between the maximum and minimum temperatures on Thursday 8 June 2017. (2)

1.3. The comparative bar graph shows the national registration statistics of the population of South Africa for both male and female as at 28 April 2018.



Study the graph above and answer the questions that follow.

1.3.1. Write down the age group in which the second highest number of female voters have registered. (2)

1.3.2. Calculate the number of male voters under the age of 40 years. (2)

1.3.3. Write down, in words, the number of female voters in the 40–49 age group. (2)

1.3.4. State whether the data in the graph is discrete or continuous. (2)

1.3.5. Calculate the difference between the total number of male and female voters. (2)

[30]

END OF QUESTION 1 PART TWO

PART THREE OF QUESTION 1: Adapted from 2017 NSC May/June Paper 1

1.1. A furniture store offers a dining-room suite for sale. It should be paid off in 42 equal monthly instalments of $R1\ 078{,}26$ (15% VAT included). No deposit is required for this offer.

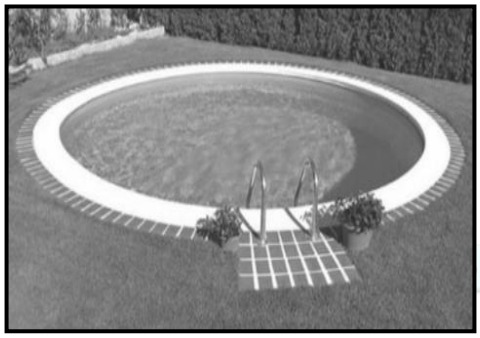
1.1.1 Express (in years) the total repayment period for this offer. (2)

1.1.2 Determine the total repayment cost for this dining room suite. (2)

1.1.3 The advertised price for this dining room suite is R29 999,00. The store offers 15% discount on the advertised price if the purchase is settled immediately in ONE payment. Calculate the value of the discount amount offered. (2)

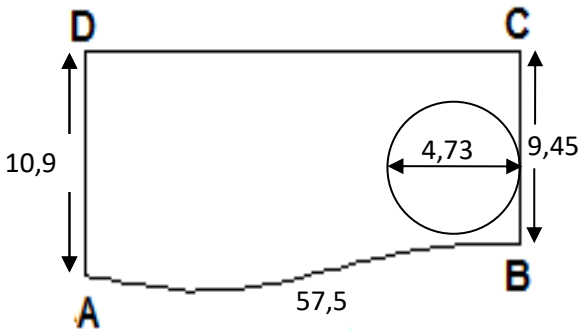
1.2. The photograph and sketch below show a circular swimming pool in a portion of Annette's garden.

CIRCULAR SWIMMING POOL



[Source: www.megaide.se]

SKETCH OF THE SWIMMING POOL IN THE GARDEN WITH DIMENSIONS (in metres)



NOTE: The curved distance for AB is 57,5 m.

1.2.1. Give, in simplified form, the ratio of distance AD to distance CB. (2)

1.2.2. The perimeter of ABCD is 125,92 m. Calculate the distance CD. (2)

1.2.3. Write down the length of the radius of the pool. (2)

1.2.4. A fence will be erected along the curved side AB at a cost $R97{,}56$ per running metre. Calculate the total cost of erecting the fence. (2)

1.3.

TABLE 1 below shows the weather forecast with maximum and minimum temperatures for three cities for 29 April 2017.

TABLE 1: WEATHER FORECAST WITH MAXIMUM AND MINIMUM TEMPERATURES OF THREE CITIES FOR 29 APRIL 2017

	TEMPERATURE IN °C (Celsius)		WEATHER FORECAST	
CITY	**MAXIMUM**	**MINIMUM**	**SUN AND CLOUD COVER**	**% CHANCE OF RAIN**
A	24	6		59
B	32	26		0
C	8	– 7		3

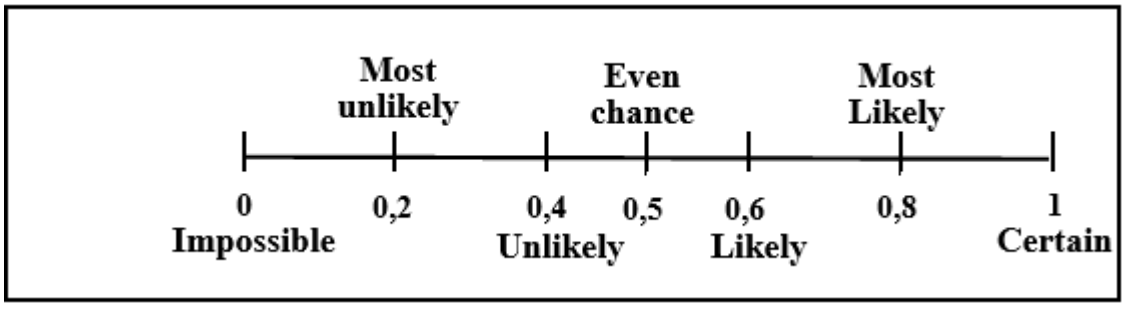
[Adapted from AccuWeather.com]

Use TABLE 1 above to answer the questions that follow.

1.3.1. Identify the city with the lowest temperature. (2)

1.3.2. Calculate the temperature range for City C. (2)

1.3.3. A probability scale in words and as decimal fractions is given below.



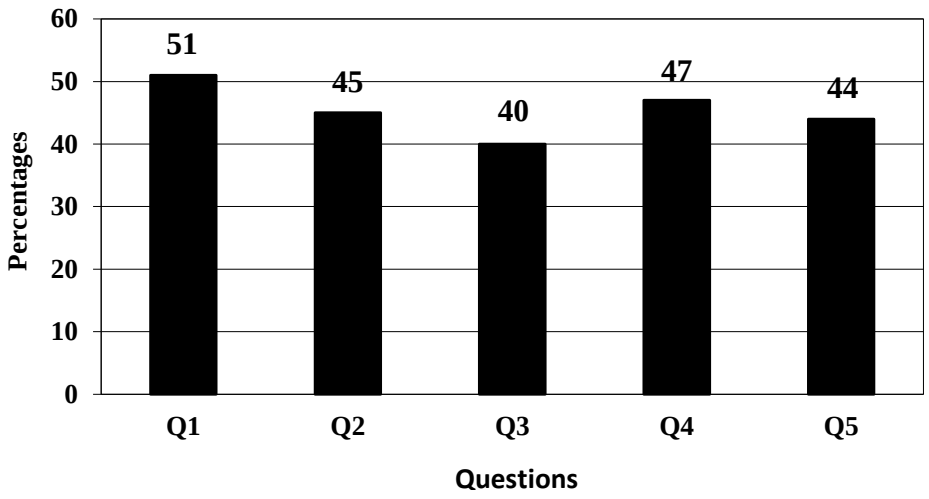
Use the probability scale and TABLE 1 above to answer the questions that follow.

a) Identify the city that has NO chance of rain. (2)

b) Write down, in words, the chance of rain for City A. (2)

1.4. 361 948 candidates wrote Mathematical Literacy Paper 1 in 2016. The paper had a total of 150 marks and candidates had three hours to complete the paper. The graph below shows the average percentage mark per question for this paper.

AVERAGE PERCENTAGE MARK PER QUESTION FOR MATHEMATICAL LITERACY PAPER 1



[Source: *2016 NSC Examination Diagnostic Report*]

Use the information and the graph above to answer the questions that follow.

1.4.1. Name the type of graph used to represent the data. (2)

1.4.2. Express the number of candidates who wrote this paper in words. (2)

1.4.3. Identify the question in which the candidates obtained the second lowest average percentage mark. (2)

1.4.4. Determine (in minutes) the average time per mark required for this paper. (2)

[30]

End of QUESTION 1 PART THREE

PART 4 OF QUESTION 1: Adapted from 2019 NSC Nov Paper 1

1.1. Happy Life Superstore advertised the specials below for the annual Black Friday in 2017.

<table>
<tr>
<td colspan="2"> 
2 ℓ bottles
Coke, Sprite and Fanta
30% OFF
R11 each</td>
<td colspan="2"> 
Ariel
50% OFF
R45 each</td>
</tr>
<tr>
<td> 
Sunlight
35% OFF
R18</td>
<td> 
Classic
45% OFF
R15 each</td>
<td> 
Liquifruit
40% OFF
R22 each</td>
<td> 
Weetbix
Save R20
R44</td>
</tr>
<tr>
<td> 
Jacobs
Save R35
R65 each</td>
<td> 
Airborne
Save R25
R30 per pack</td>
<td> 
hth
Save R70
R250</td>
<td> 
Gaviscon
Save R30
R43</td>
</tr>
</table>

NOTE:

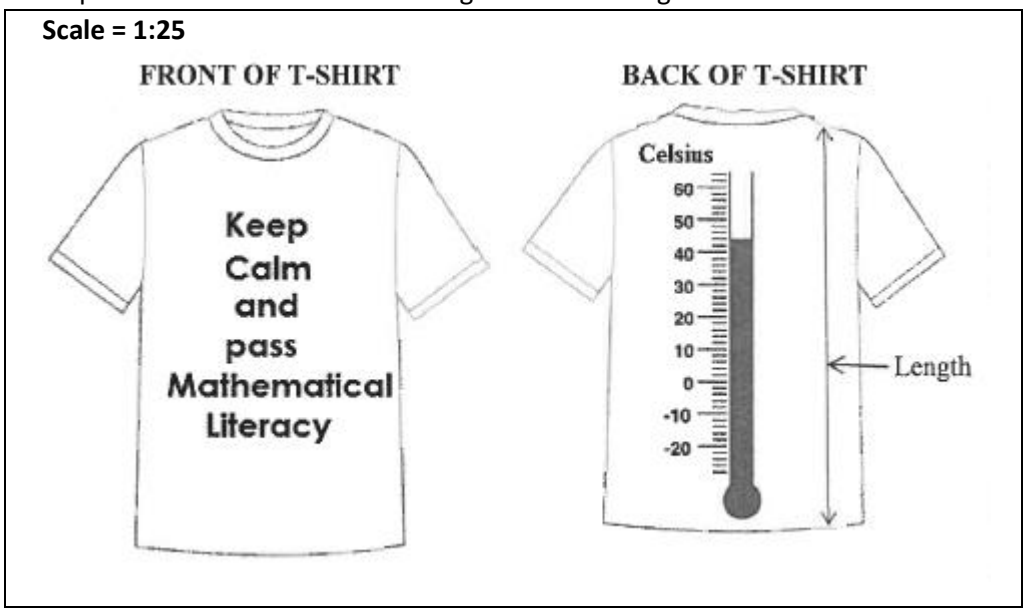
- $1l = 1\,000\,ml$
- All amounts given INCLUDE the discount

Study the advertisement above to answer the questions that follow.

1.1.1. Write down the number of days on which these prices are valid. (2)
1.1.2. Calculate the Original price of hth before the saving. (2)
1.1.3. Write down the name of the product which is now half price. (2)
1.1.4. Covert 750 ml to litres. (2)
1.1.5. Calculate the total price of ONE 2 l-bottle of Coca Cola and TWO 2l-bottles of Fanta. (2)
1.1.6. Arrange ALL the sale prices in ascending order. (2)

1.2. The picture below is a scaled drawing of a T-shirt for grade 12 learners.

Scale = 1:25



1.2.1. Calculate the number of letters needed to print the logo on the front of the T-shirt. (2)

1.2.2. Write down the temperature displayed on the thermometer in °C. (2)

1.2.3. Explain the meaning of the scale in the drawing above. (2)

1.2.4. Measure the length of the back of the T-shirt in mm, as indicated in the drawing. (2)

1.3. The Two Oceans Marathon and the Comrades Marathon are two of the most popular ultramarathons in the world.

TABLE 1 below shows the dates, distances and entry fees of these marathons.

TABLE 1: TWO OCEANS MARATHON V/S COMRADES MARATHON

	TWO OCEANS	COMRADES
Date (2017)	**15 April 2017**	**4 June 2017**
Distance	**56 km**	**89 km**
Entry fee	**R520,00**	**R460,00**

Use TABLE 1 above to answer the questions that follow.

1.3.1. Which race took place first? (2)

1.3.2. Which one of the two races had the longest distance? (2)

1.3.3. Determine the difference between the entrance fee of the Two Oceans Marathon and the entrance fee of the Comrades Marathon. (2)

1.4. The comrades Marathon Association (CMA) has issued its medical statistics for the race held on Sunday 4 June 2017.
Start of the race: 05:30
End of the race: 17:30

TABLE 2 shows the medical statistics on race day.

TABLE 2: MEDICAL STATISTICS

Athletes starting the race	17 031
Athletes finishing the race	13 852
Athletes treated in the medical tent	400
Hospital-treated athletes	90
Hospital-admitted athletes	40

Use the TABLE 2 above to answer the questions that follow:

1.4.1. Write down the maximum time given to the athletes to complete the Comrades Marathon. (2)

1.4.2. State if the medical statistics data is discrete or continuous. (2)

1.4.3. Write down the ratio of athletes starting the race to the athletes finishing the race. (2)

[32]

END OF QUESTION 1 PART FOUR

SECTION 2: FINANCE

QUESTION 2

Overview

- Question 2 focuses on Finance; Probability may be Integrated in this section.
- Finance section in the whole paper weighs approximately 40 to 25 marks
- The following Sub-sections should be covered under finance:
  - Financial documents
  - Tariff Systems
  - Income, Expenditure, Profit/loss, Income and Expenditure statements and budgets.
  - Cost Price and Selling Price.
  - Break even analysis.
  - Interest, Banking, loans and investments
  - Inflation.
  - Exchange rates.
  - Taxation (VAT, UIF, Personal Income Tax).

- In preparing learners for Exams, please ensure the learners are able to:
  - Define (explain) the meaning of financial terms
  - Calculate total income/ expenses from a given set of amounts and analyse the break-even point;
  - Calculate profit/loss if income and expenses are both given;
  - Substitute into a given formula;
  - Rounding should be done according to the given context;
  - Read information directly from a financial table;
  - Calculate simple interest and compound interest without using a formula;
  - Increase or decrease a given amount by a certain percentage;
  - Calculate a one-step currency fluctuation and exchange rates;
  - Identify exchange rates between two currencies from the table
  - Show awareness of the significance of digits.
  - Calculate VAT, PAYE/personal tax.

Exam Tips

- Exam tips for both teachers and learners
  - Teachers should focus on concepts related to VAT calculations i.e. calculating the amount of VAT charged on prices excluding VAT and on prices Including VAT. They should also focus on rounding within the context.
  - Learners should be exposed to all the different Tariff systems. E.g. Sewerage cost, electricity, water, Cell-phone, etc.
  - Teachers should enhance learners' skills of interpreting and filtering the information given in the question so that they will be able to select the information to be used in calculations.
  - Learners should be exposed to ALL the financial documents that are listed in the CAPS document.

POSSIBLE QUESTION 2'S IN PAPER 1: Adapted from 2019 June NSC Paper1

2.1. Susan intends selling cups of Milo at the local taxi rank for extra money. Milo is a nutritious supplementary drink developed to provide active people with key vitamins and minerals.

Pamphlet below shows the advertisement from her local store where she intends to buy her stock.

<table>
<tr>
<td rowspan="2">  </td>
<td>MILO OPTION 1
R97,95 per unit
1 unit = 1 kg</td>
<td>  </td>
<td>PLASTIC SPOONS
R12,75 for
50 plastic spoons</td>
</tr>
<tr>
<td>MILO OPTION 2
R1 140,95 for
12 units × 1 kg</td>
<td>  </td>
<td>SUGAR
R33,20 per unit
1 unit = 2,5 kg</td>
</tr>
<tr>
<td>  </td>
<td>FOAM CUPS
R1,78 for
1 foam cup</td>
<td>  </td>
<td>MILK
R11,99 per unit
1 unit = 1 ℓ</td>
</tr>
</table>

Use the Pamphlet above to answer the following questions.

2.1.1. Determine the unit price when purchasing Milo option 2. (2)

2.1.2. Determine the total cost of 6 ℓ of milk. (2)

2.1.3. Explain the meaning of the word cost price. (2)

2.1.4. Susan decided to exclude the cost of water when calculating the cost price per cup of Milo.

TABLE 1 below shows how Susan calculated the cost price of ONE cup of Milo.

TABLE 1

QUANTITY BOUGHT	COST OF INGREDIENTS	AMOUNT USED FOR ONE CUP	COST PER CUP OF MILO
1 kg Milo	$R97{,}95$	$0{,}04\ kg$	$\boldsymbol{A}$
1 l milk	$R11{,}99$	$\boldsymbol{B}$	$R1{,}20$
2,5 kg sugar	$R33{,}20$	$0{,}01\ kg$	$R0{,}13$
25 foam cups	$\boldsymbol{C}$	$\boldsymbol{ONE}$	$R1{,}78$
50 spoons	$R12{,}75$	$\boldsymbol{ONE}$	$R0{,}26$
TOTAL COSTS			$\boldsymbol{D}$

a) Calculate A, the cost of Milo per cup. (2)

b) Determine B, the amount of milk, in litres, used for ONE cup of Milo. (2)

c) Write down the value of C, the cost of 25 foam cups. (2)

d) Show that the cost of ONE cup of Milo, D, is R7,29. (2)

2.1.5. Determine the selling price of ONE cup of Milo if Susan's intended profit margin is 25%. (2)

2.2. Susan started her business one month later and because of the price increase of products, it then cost her R9,50 to make ONE cup of Milo. She calculated that the daily fixed cost was R90,00 and she would be able to sell 100 cups of Milo per day. She will sell the Milo at R12,50 per cup.

Use the Information above to answer the questions that follow.

2.2.1. **TABLE 2** shows the income from the sale of cups of Milo.

TABLE 2: INCOME FROM THE SALE OF CUPS OF MILO

Number of cups of Milo (n)	0	20	30	40	80	100
Income in rand (R)	0	250	375	***P***	1000	1250

a) Determine the value of P in TABLE 2 above. (2)
b) Write down an equation that can be used to calculate the income. (2)
c) Identify the independent variable in TABLE 2. (2)

2.2.2. Susan uses the following formula to determine the cost price of the cups of Milo.

Cost $= \boldsymbol{R90,00 + R9,50 \times n}$ where n = number of cups of Milo

TABLE 3 shows the cost price for a number of cups of Milo.

TABLE 3: COST PRICE OF A NUMBER OF CUPS OF MILO

Number of cups of Milo (n)	0	20	30	Q	80	100
Cost price in rand (R)	90	280	375	612,50	850	1040

Calculate the value of Q above. (3)

2.2.3. The graph on the next page shows the total income for making up to 100 cups of Milo. Use the information in TABLE 3 to draw another graph representing the cost from the selling of up to 100 cups of Milo.

2.2.4. Use the tables or graphs on the next page to answer the following questions.

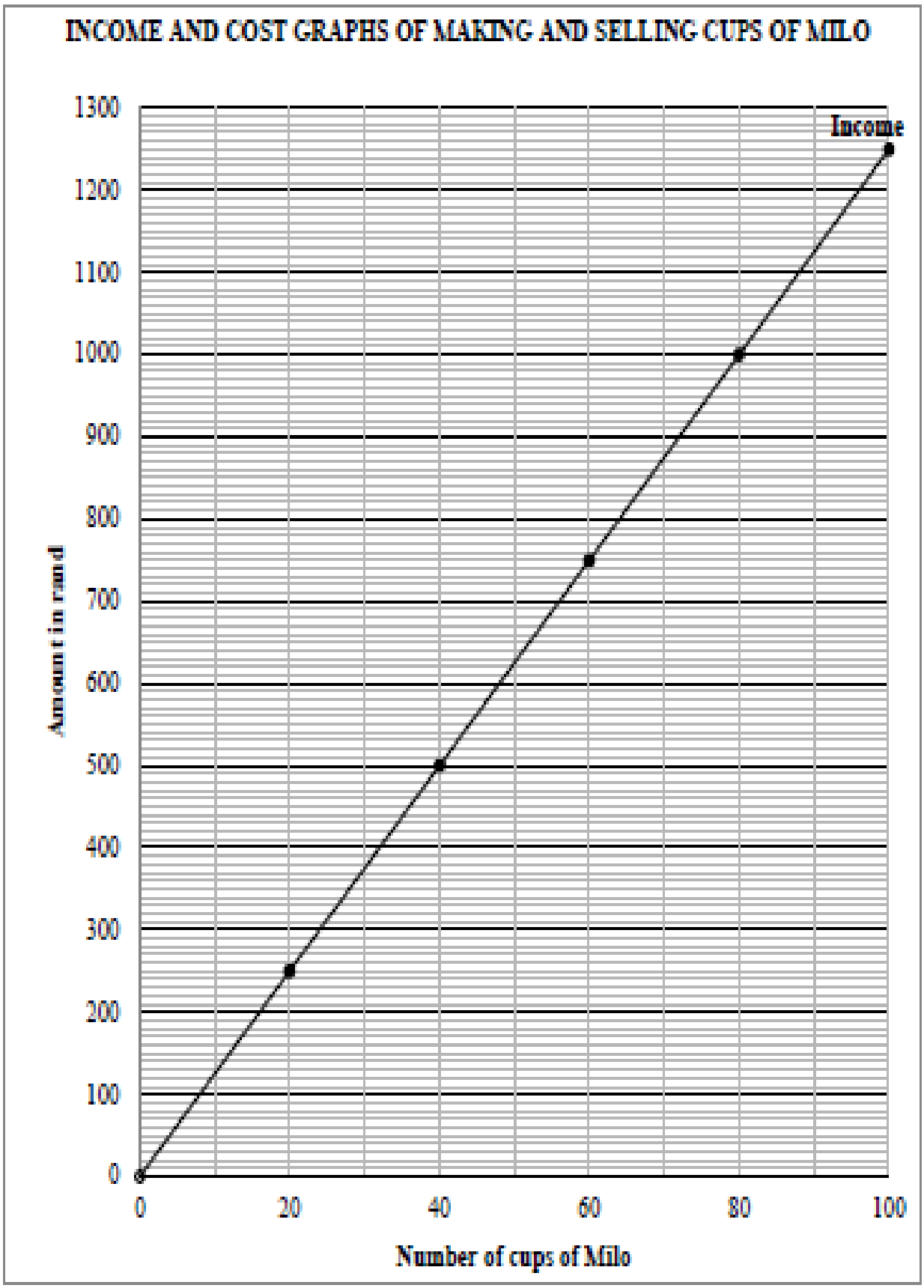
a) Explain the meaning of the word break-even in the context of the question. (2)
b) Determine the number of cups of Milo at the break-even point. (2)

2.3. Susan decides to send $R1\ 200$ to her sister who is studying in Japan.

The exchange rate on that date is $1\ yen = R0{,}10976$

2.3.1. Calculate the amount of money she sends in Japanese yen. (3)

2.3.2. State whether the yen is stronger or weaker than the rand. (2)



POSSIBLE QUESTION 2'S IN PAPER 1: Adapted from 2018 Nov NSC Paper1

2.4. The document below shows the student fees statement for Tamryn Abrahams, a second year Student at the University of Cape Town (UCT).

UNIVERSITY OF CAPE TOWN

FEES OFFICE
UCT
PRIVATE BAG X3
RONDEBOSCH
7701

+27 21 650-1704
+27 21 650-4768
Email: fhd-feesenq@uct.ac.za
Web: http://www.uct.ac.za

Fees and Cashiers Office Hours/Location:
Monday - Friday 08h00 – 15h30
Thursday - 08h30 – 15h30
Level 3, Kramer Law Building, Middle Campus

STUDENT FEES STATEMENT

Page 1 of 1

Miss Tamryn Abrahams 24 Hoop Street Extension 12 Upington 8801	Statement of account as on	06/10/17
	e-mail address	John_Abrms@gmail.com
	Invoice ID	UCT STAT NO. 0003399891
	Student name	Tamryn Jessica Abrahams
	Student number	ABRTAM002
	Account number	1567858
	Anticipated funding	R0,00

Date	Details*	Debit	Credit	Balance
	Balance brought forward	14 819,50		14 819,50
31/12/16	Interest on overdue fees	148,20		14 967,70
16/01/17	No. 5 Bank Acc direct deposit Ref 950230173		–8 650,00	6 317,70
06/03/17	APG 2000F History & Theory of Arch	3 030,00		
06/03/17	APG 2000F History & Theory of Arch	3 030,00		
06/03/17	APG 2003S Theory Structures 3	2 280,00		
06/03/17	APG 2009F Theory Structures 4	2 280,00		
06/03/17	APG 2011S Technology 2	9 580,00		
06/03/17	APG 2038W Environ & Services II	4 530,00		
06/03/17	APG 2039W Design & Theory Studio II	29 460,00		
23/03/17	Late payment penalty	2 087,00		62 594,70
16/05/17	No. 5 Bank Acc direct deposit Ref 950241526		–23 000,00	39 594,70
31/08/17	Interest on overdue fees	395,95		
30/09/17	Interest on overdue fees	395,95		
E. & O.E	Due to us			R40 386,60

Use the document above to help you answer the questions that follow:

2.4.1. Explain the meaning of the term *interest* with reference to the student fees statement. (2)

2.4.2. Write down the balance (excluding interest) that was brought forward on the last day of the previous year. (2)

2.4.3. Calculate the monthly interest rate that was used on the overdue fees for the previous year. (2)

2.4.4. Write down the code and the name of the module/course that is the most expensive. (2)

2.4.5. Show how the amount of $R6\ 317{,}70$ was calculated. (2)

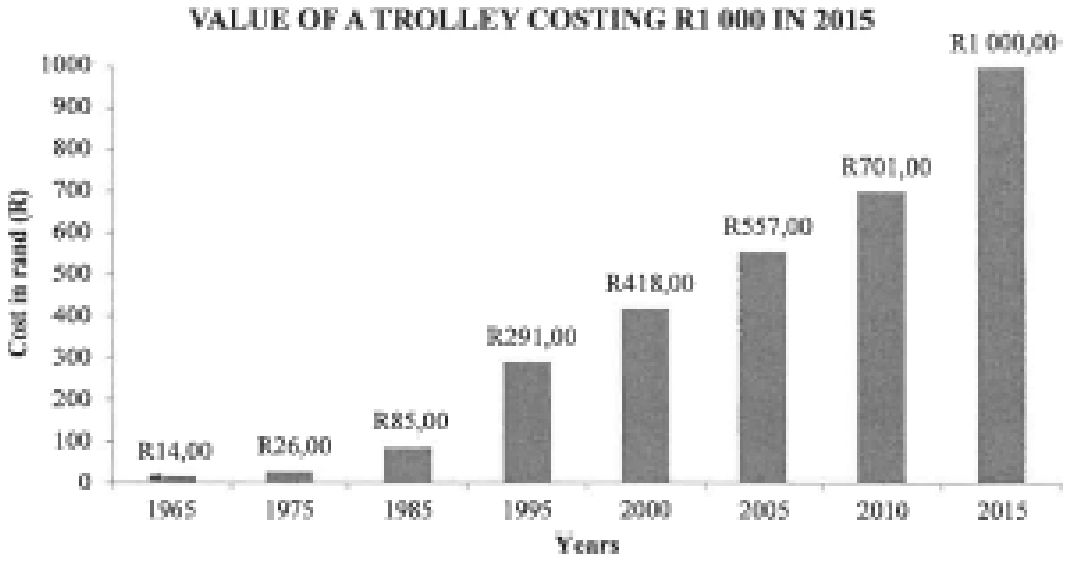
2.4.6. Calculate the total amount debited to this account for the course studied in the 2017 academic year including interest on overdue fees in 2017. (3)

2.4.7. State the payment method used to transfer money into this account. (2)

2.4.8. A family friend paid the balance of R40 386,60 on condition that the amount could be paid back in equal monthly instalments, interest free.

Show how the monthly instalment of R8 077,32 was calculated if the first payment was due on 1 November 2017 and the last payment was due on 1 March 2018. (2)

2.5. The graph below shows the effect of inflation from 2015 going back 50 years.



Below are certain South African items and their prices for the years 1970 and 2015.

	PRICE IN 1970	PRICE IN 2015
Spur Burger	$R0{,}30$	$R62{,}90$
Cheddamelt Steak	$R0{,}50$	$R104{,}90$
750g Ricoffy	$R0{,}25$	$R75{,}00$
Nestle Condensed milk	$R0{,}10$	$R19{,}00$

Use the information above to answer the questions that follow.

2.5.1. Explain the term *Inflation* within the given context. (2)

2.5.2. Write down the price of a Spur burger in 1970. (2)

2.5.3. Calculate by how much the cost, in rand, of a trolley had increased from 2000 to 2005. (2)

2.5.4. Calculate the percentage increase of Ricoffy from 1970 to 2015.

You may use the following formula:

$$\text{Percentage increase} = \frac{new\ amount - original\ amount}{original\ amount} \times 100\%$$ (3)

2.5.5. A Cheddamelt steak was sold for R104,90 at a percentage profit of 17,5%.
Determine the cost price. (2)

2.6. TABLE 3 below shows the national budget and education budget of South Africa for 2017/2018.

TABLE 3: NATIONAL BUDGET AND EDUCATION BUDGET OF SOUTH AFRICA FOR 2017/2018

NATIONAL BUDGET OF SOUTH AFRICA (IN RAND)		EDUCATION BUDGET OF SOUTH AFRICA (IN RAND)	
Economic affairs and agriculture	241,6 *billion*	Basic education	216,7 *billion*
Defence and public safety	198,7 *billion*	University subsidies	31,6 *billion*
Health	187,5 *billion*	Education administration	15,8 *billion*
General admin	70,7 *billion*	Skills development levy institutions	21,1 *billion*
Local development and infrastructure	195,8 *billion*	National student financial aid scheme (NSFAS)	15,3 *billion*
Debt service costs	162,4 *billion*	Technical and vocational education and training	7,5 *billion*
Social protection	180,0 *billion*	Other	12,5 *billion*
Education	320,5 *billion*		

Use TABLE 3 above to answer the questions that follow.

2.6.1. Which of the amounts below represents the economic affairs and agriculture budgets?

A. 24 160 000
B. 241 600 000 000
C. 241 600 000
D. 24 160 000 000 000 (2)

2.6.2. Explain the term *budget* within the context above. (2)

2.6.3. Write down the item which receives the third most money from the education budget. (2)

2.6.4. Calculate the percentage of the total education budget that is allocated to the NSFAS. (3)

2.6.5. University subsidies comprises about 9,86% of the total education budget. Estimate the Combined budget, as a percentage, for education administration and the NSFAS. (2)

POSSIBLE QUESTION 2'S IN PAPER 1: Adapted from FS 2019 Prelim Paper1

2.7. All employers have an obligation to provide their employees with a pay slip on a monthly basis. A pay slip of a certain company is shown below.

PAY SLIP			
Employer: Thusa-Batho Construction Company	**Employee:** Mr Kivido	**Position:** Manager	**Date of Birth:** 15/06/1969
Pay date: 30/07/2018	**Gross salary** 31 221,25	**Deductions** 9 362,62	**Nett Salary** **M**

EARNINGS	**AMOUNT**	**DEDUCTIONS**	**AMOUNT**
Basic salary	R30 021,25	Income Tax	R4 736,90
Housing allowance	R 1 200,00	Pension Fund	R2 251,59
		Medical Aid	**N**
		Insurance Policy 1	R 245,23
		Insurance Policy 2	R 192,70
		Insurance Policy 3	R 141,95
		Agency	R 90,25

Use the payslip above to answer the questions that follow.

2.7.1. Explain the meaning of the term *Gross salary*. (2)
2.7.2. Write down the name of the employee. (2)
2.7.3. Which month is covered by this payslip? (2)
2.7.4. Determine the percentage of the employee's basic salary that was paid towards the pension fund. (3)

2.7.5. Calculate:

a) **N**, the medical aid contribution (3)
b) **M**, the nett salary (2)

2.8.

Mr Kivido intends to buy a new car. He came across the advert of a car below while searching information on the internet.

ONLY R3 099 per month

Tank size: 45 litres

Fuel price: R15,81/ ℓ

Deposit	Period	Balloon (i.e residual)	Interest rate	Retail price	Total cost
10%	72 months	35%	9,26%	R239 900	R331 083

NOTE: Balloon payment is a lump sum owed to the lender at the end of a loan term after ALL regular monthly repayments have been made.

Use the information above to answer the following questions.

2.8.1. Explain the meaning of the term *interest rate*. (2)

2.8.2. Determine the period (in years) of paying for this car. (2)

2.8.3. Calculate the amount of deposit Mr Kivido will have to pay. (3)

2.8.4. How much will Mr Kivido have saved if he paid cash for this car? (3)

2.8.5. If the last amount to be paid includes the balloon payment, show with calculation that Mr Kivido's last total payment will be R87 064. (3)

2.8.6. Determine the cost of a full tank of fuel. (3)

POSSIBLE QUESTION 2'S IN PAPER 1: Adapted from KZN 2019 Prelim Paper1

2.9. Thabo and three friends from Gauteng plan to take a holiday to Cape Town. They will spend 4 days in Cape Town and they estimate that they will travel 3 600 km for the duration of their holiday. They obtain two quotations from Pace car rental and Car flexi rental. The daily car rental rates are shown in the table below.

Pace car rental	R290 per day 200 km free per day R2,42/km (if 200 km per day is exceeded) R10 000 Refundable security deposit
Car flexi rental	R326 per day 150 km free per day R2,83/km (if 150 km per day is exceeded) R10 000 Refundable security deposit

Formula to calculate total amount used by Pace car rental:

$$(\boldsymbol{daily\ rate} \times \mathbf{4}\ \boldsymbol{days}) + (\boldsymbol{no\ of\ km\ more\ than}\ \mathbf{800}\boldsymbol{km} \times \boldsymbol{R2,42}) + \boldsymbol{Refundable\ deposit}$$

Formula to calculate total amount used by Car flexi rental:

$$(\boldsymbol{daily\ rate} \times \mathbf{4}\ \boldsymbol{days}) + (\boldsymbol{no\ of\ km\ more\ than}\ \mathbf{600}\boldsymbol{km} \times \boldsymbol{R2,82}) + \boldsymbol{Refundable\ deposit}$$

Use the information above to answer the following questions.

2.9.1 Calculate the total amount that Thabo and friends will pay if they rent a car from Pace car rental. (3)

2.9.2 Calculate the total amount that Thabo and friends will pay if they rent a car from Car flexi rental. (3)

2.9.3 Which car rental company is cheaper? (2)

2.10 Martha receives a bank statement from her bank every month. An extract from her bank statement is shown below.

TABLE 2: AN EXTRACT OF PART OF A BANK STATEMENT FOR A CHEQUE ACCOUNT

DATE	DESCRIPTION	AMOUNT IN RANDS	BALANCE IN RANDS
01.02.2018	Opening balance		1 855,52 Cr
15.02.2018	Deposit: P Siyaya	1 500 Cr	**A**
20.02.2018	TK insurance	350,50	3 005,02 Cr
23.02.2018	Best goodies	1 246,85	1 758,17 Cr
28.02.2018	# monthly account fee	100,00	1 658,17 Cr
	Closing balance		1 658,17 Cr
# VAT 14%			

Use information on the bank statement above to answer the questions that follow.

2.10.1. Define the term opening balance in this context. (2)

2.10.2. How much is the opening balance? (2)

2.10.3. Determine the balance (A) on the cheque account on 15.02.2018. (2)

2.10.4. Calculate the VAT exclusive amount for the monthly account fee. (2)

2.10.5. If the balance in the bank account is positive, is it a debit or a credit? (2)

POSSIBLE QUESTION 2'S IN PAPER 1: Adapted from 2017 June NSC Paper1

2.11. Mr Piedt earns an annual taxable income of R542 096,76.
TABLE 1 below is a tax table that shows how much personal income tax he needs to pay.

TABLE 1: INCOME TAX RATES FOR INDIVIDUALS
2017 TAX YEAR (1 MARCH 2016–28 FEBRUARY 2017)

TAX BRACKET	TAXABLE INCOME (R)	TAX RATES (R)
1	0–188 000	18% of taxable income
2	188 001–293 600	33 840 + 26% of taxable income above 188 000
3	293 601–406 400	61 296 + 31% of taxable income above 293 600
4	406 401–550 100	96 264 + 36% of taxable income above 406 400
5	550 101–701 300	147 996 + 39% of taxable income above 550 100
6	701 301 and above	206 964 + 41% of taxable income above 701 300

2.11.1. What does the acronym SARS stand for? (2)

2.11.2. Write down the minimum amount of tax payable for tax bracket 3. (2)

2.11.3. Calculate Mr Piedt's average monthly taxable income. (2)

2.11.4. Identify the tax bracket applicable to Mr Piedt's taxable income. (2)

POSSIBLE QUESTION 2'S IN PAPER 1: Adapted from 2019 Nov NSC Paper1

2.12 An extract of Mr Daniel's monthly municipal statement including the residential water and sewer tariff tables is shown below

Mr KJ Daniels **14 Sirkoon Street** **Kruger Park** **2738**		Date: Statement for:	2019/03/12 March 2019

STAND SIZE	NUMBER OF DWELLINGS	DATE OF VALUATION	PORTION	MUNICIPAL VALUATION	REGION
463 m^2	1	2018/07/01	R1	Market value R944 630,00	WARD C

ACCOUNT NUMBER: 345 678 8900 60			
		SUBTOTAL (R)	TOTAL AMOUNT (R)
Water and sewer			
Reading period	2019/01/16 to 2019/02/12		
Meter reading	Start: 795 000 End: 807 000		
Water usage	12 kℓ (kilolitres)		
Daily average consumption	0,429 kℓ		
Charges for 12 kℓ are based on a sliding scale for a 28-day period			
Total water charge (excluding VAT)		B	
Water demand management levy		22,64	
Monthly sewer charge based on stand size (excluding VAT)		A	
VAT: 15%		73,75	

PAYMENT DUE		XXX
DUE DATE		2019/03/27

STEPPED RESIDENTIAL WATER TARIFF	
KILOLITRES PER CONNECTION PER MONTH	2018/19 TARIFF (R/kℓ) EXCLUDING 15% VAT
from 0 to 6	8,28
above 6 to 10	8,79
above 10 to 15	15,00
above 15 to 20	21,83

SEWER MONTHLY CHARGE BASED ON STAND SIZE	
STAND SIZE (m^2)	2018/19 TOTAL CHARGE (IN RAND) EXCLUDING 15% VAT
Up to and including 300 m^2	194,67
Larger than 300 m^2 to 1 000 m^2	378,95
Larger than 1 000 m^2 to 2 000 m^2	573,29
Larger than 2 000 m^2	836,02

[Adapted from www.joburgwater.co.za and www.jotariffs.co.za]

Use the statement above to help you answer the questions that follow:

2.12.1. Write down the market value in words. (2)

2.12.2. Calculate the VAT amount for the sewer monthly charge on a stand larger than $2000m^2$ (2)

2.12.3. Write down the unit of measurement that was used for the meter readings. (2)

2.12.4. Determine the value of **A**. (2)

2.12.5. Use the stepped residential water tariff table to calculate the value of **B**, the total amount for water usage. (4)

2.13 The Government receives income from various sources, like tax and loans. This income is then distributed to the different sectors.

TABLE 3 below shows the source of the income and the expenditure for the 2019/20 tax year.

TABLE 3: GOVERNMENT SOURCES OF INCOME AND EXPENDITURE FOR 2019/20

INCOME		EXPENDITURE	
SOURCE	**AMOUNT (In billion rand)**	**SECTOR**	**AMOUNT (In billion rand)**
Tax	1 370	Social Development	278,4
Loans	242,7	Basic Education	262,4
Other Income	180,3	Health	222,6
Non-tax income	31,5	Peace and safety	211,0
		Economic Development	209,2
		Community Development	208,5
		Debt Service Cost	202,2
		Further Education and Training	112,7
		Other	***B***
TOTAL	***A***		1 823,72

Use TABLE 3 above to answer the questions that follow.

2.13.1. Write the amount received from loans as a number in millions. (2)

2.13.2. Calculate the missing value of **A**. (2)

2.13.3. Calculate the missing value **B.** Show ALL calculations. (4)

2.13.4. Determine the amount allocated for Community Development as a percentage of the total Expenditure. (3)

POSSIBLE QUESTION 2'S IN PAPER 1: Adapted from 2019 Nov NSC Paper1

2.14.

Willie wants to ensure that he will have enough money for his trip to the 2019 Rugby World Cup and therefore decided to keep a close eye on his finances. He obtained a bank statement to check all his transactions and to see if he could pay less in bank charges.

The following transactions were made by Willie during August 2018 on his A7 Achievers account from Commercial Bank:

- 1 × ATM cash withdrawal of R1000,00 from a Commercial Bank ATM.
- 1 × ATM cash withdrawal of R900,00 from another bank's ATM.
- An external debit order for R950,00.
- An internal debit order for R470,00.
- 2 × external stop orders to third parties for R2 750,00 and R3 250,00 respectively.
- His salary of R23 550,00 is deposited electronically into his account every month.
- 1 × ATM cash deposit of R2 450,00.

Use the A7 Achievers account Pricing guide on the below to help you answer this question.

COMMERCIAL BANK

A7 ACHIEVERS Pricing Guide	
Monthly fees: Monthly account fee	 R51,00
Cash withdrawals: Commercial Bank ATM Other bank's ATM From a Commercial Bank Branch	 R5,70 (per R500) (max R22,80) R6,50 + Commercial Bank ATM fee R27,50 + 1,25% of cash withdrawal (max R3 000)
Deposits: Cheque deposits ATM-/cash deposits Electronic transfers	 R14,00 1,2% of the value (min R12,00) 0,65% (min R5,00)
Third party payments: Internal debit/stop orders (to other Commercial Bank accounts) External debit/stop orders Cell phone/telephone banking Online external transfers Cheques	 R3,30 R8,80 R1,00 R8,80 Free
Linked account transfers: Cell phone/telephone banking Online internal transfers	 R1,00 R3,30

2.14.1. Calculate Willie's bank fees for August 2018. (10)

END OF QUESTION 2'S

SECTION 3: MEASUREMENTS

QUESTION 3

Overview

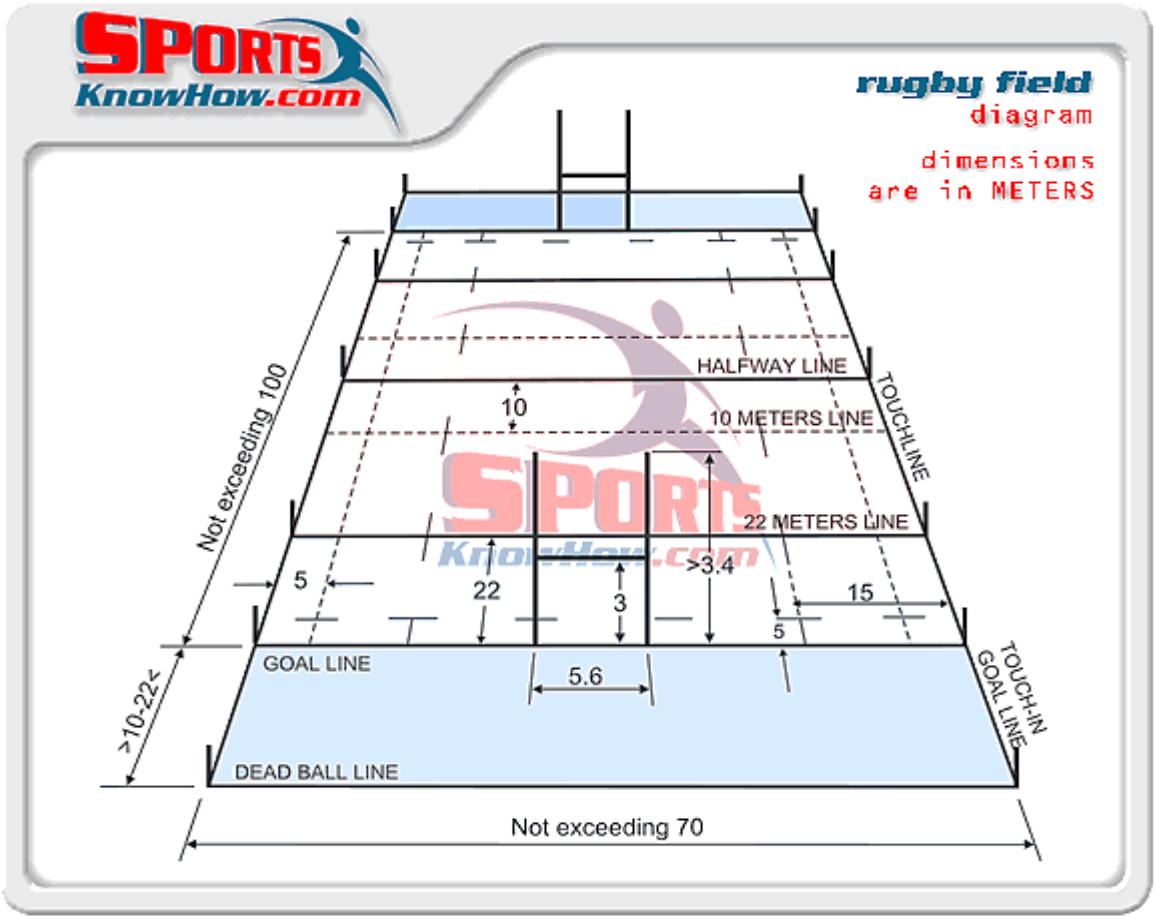
- Question 3 focuses on Measurements, Probability may be Integrated in this section.
- Measurements section in the whole paper weighs 20% (+-5%)
- Taxonomy levels 1,2,3 may be assessed.
- The following Sub-sections should be covered under Measurements
  - Conversions
  - Measuring length, weight, volume and temperature
  - Perimeter, area, surface area and volume
  - Time
- In preparing learners for Exams, please ensure the learners are able to:
  - **Convert units** of measurement between different scales and systems using provided conversion tables,
  - **Converting** to a smaller unit of length, time, weight, etc.
  - **Converting** to a bigger unit of length, time, weight, etc.
  - **Converting** units of area; and
  - **Converting** units of volume.
  - **Calculate** and **estimate** values using basic operations that involve length and distance, where each of the required dimensions is readily available.
  - **Understand** and **use formulae** such as: perimeters and areas of polygons, volumes of right prisms, right circular cylinders, surface areas of right prisms and right circular cylinders, where the dimensions and formulae are readily available;
  - **Write** a ratio of two quantities which are already in the same unit;
  - **Understand** and use appropriate vocabulary such as: equation, formulae, Cartesian plane, area, surface area, perimeter, radius, diameter, length, breadth, height, base, circumference, volume, circle, cylinder, polygons, right prisms, triangular, rectangular and square.
  - **Read information** directly from a table and use some given information and simple operations to complete a table of values;
  - **Measure** values which involve length, distance, weight and time using appropriate measuring instruments sensitive to levels of accuracy in a familiar context;
  - **Describe** relationships between input and output values in a table of data concerning space, shape and measurement.

Exam Tips

- Teachers must provide learners with conversion tables or methods like 'King Henry'... when doing conversions from one unit of measurement to the other.
- Mathematical terms such as radius and diameter must be reinforced on a regular basis. Learners must be taught how to differentiate between radius and diameter and which one to use in a calculation.
- Learners should be taught that rounding values will be determined by the context in which the rounding occurs.

POSSIBLE QUESTION 3'S IN PAPER 1: Adapted from 2019 June NSC Paper1

3.1. Rugby is a very popular and fast growing sport at Success High School. The School Governing Body has decided to approve the creation of a new rugby field. Refer to the diagram of the new rugby field below to answer the questions that follow.



The rugby field has the following features:

1. **a length of 100 m measured from and to each try-line;**
2. **a 22 m in goal area behind the poles (from the goal line to the dead ball line);**
3. **a 70 m long try line (width of the field)**

3.1.1. Define the term ***"perimeter"*** **(**2)

3.1.2. Determine the perimeter of the rugby field. (2)

3.1.3. What is the length of the rugby field? (3)

3.1.4. Calculate the area of the rugby field that has to be covered with grass.

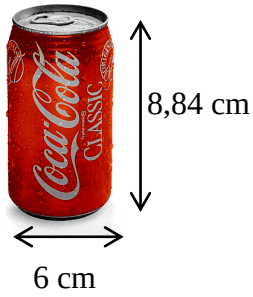
Use the formula : $\boldsymbol{Area = length \times width}$ (4)

3.1.5. Sods of grass are used to cover the rugby field. Calculate the area of one sod of grass in square metres if the dimensions of one sod of grass are $500\ mm \times 700\ mm$. (3)

3.1.6. Determine the number of sods of grass that will be needed to cover the entire rugby field. (2)

POSSIBLE QUESTION 3'S IN PAPER 1: Adapted from WC 2019 Prelim Paper1

3.2. Thalia packs a cooler bag for the road. She puts 2 six-packs cans in the cooler bag. Two six-pack cans fit exactly on top of each other in the cooler bag. A can has a diameter of 6 cm and a height of 8,84 cm.



π = 3,142

Volume = π × radius² × height

Volume = length × breadth × height **Note: 1 cm³ = 1 ml**

3.2.1. Calculate the volume of one can of cold drink, rounded to the nearest whole number. (4)

3.2.2. Write down the capacity of one can of cold drink in ml. (2)

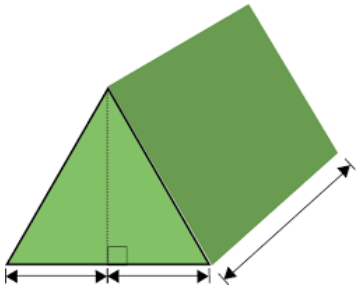
3.2.3. Calculate the height of the cooler bag, rounded to the nearest whole number. (2)

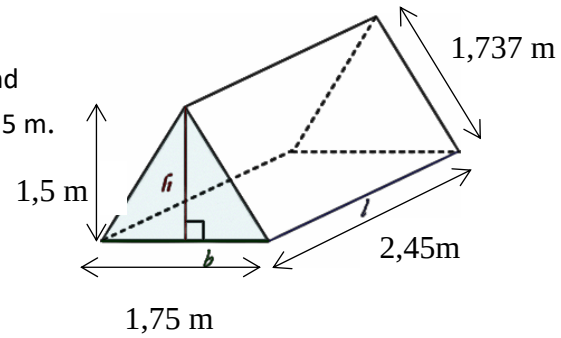
3.2.4. Calculate the volume of the cooler bag if the breadth of the bag is 12 cm and the length 18 cm. (3)

3.2.5

Corniël is very tall and made a tent with specific measurements:

- the length is 2,45m
- the breadth 1,75 m
- the slant height 1,737 m and
- the perpendicular height 1,5 m.





3.2.5. Calculate the amount of material that is needed to make the tent. The ground cloth is attached to the structure of the tent.

Use the formula: Surface area =

$2(\boldsymbol{length} \times \boldsymbol{slant\ height}) + (\boldsymbol{length} \ \ \boldsymbol{breadth}) + (\boldsymbol{base} \times \boldsymbol{perpendicular\ height})$ (5)

3.2.6. The daily temperature of Namibia is shown in Fahrenheit. If the minimum temperature on Sunday will be 47°F, convert this temperature to degrees Celsius. (2)

You may use one of the formulae:

$$°\boldsymbol{F} = (\mathbf{1,8}\ °\boldsymbol{C}) + \mathbf{32} \quad \boldsymbol{or} \quad °\boldsymbol{C} = (°\boldsymbol{F} - \mathbf{32}) \div \mathbf{1,8}$$

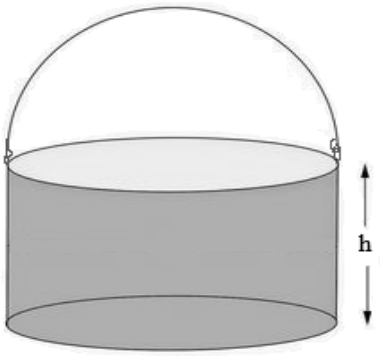
POSSIBLE QUESTION 3'S IN PAPER 1: Adapted from WC 2019 Prelim Paper1

3.4

A 20 000 cm^3 cylindrical bucket has a diameter of $10\frac{1}{2}$ inches.

NOTE:

1 inch = 2,54 cm



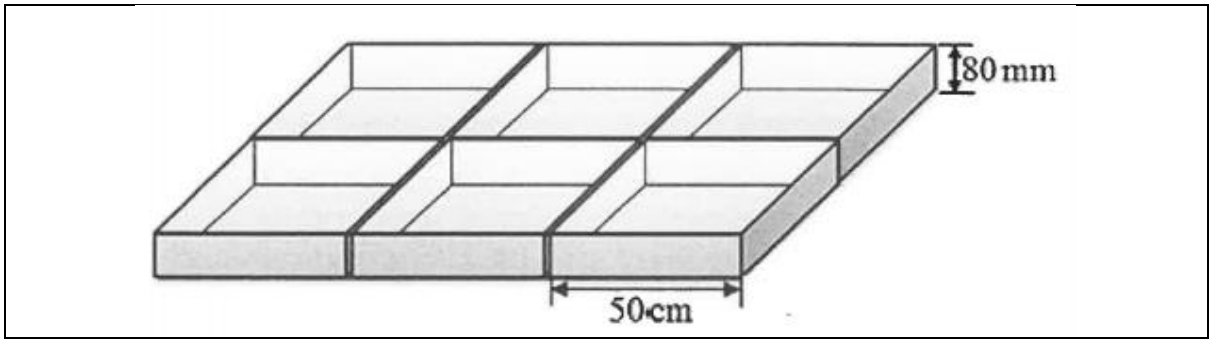
3.4.1. Determine the radius (in inches) of the cylindrical bucket. 2

3.4.2. Determine the height (in cm) of the cylindrical bucket. 3

You may use the following formula:

$$\mathbf{h} = \frac{\mathbf{Volume\ (in\ cm^3)}}{\frac{1}{4} \times \boldsymbol{\pi} \times \mathbf{(diameter\ in\ cm)^2}}$$ using π = 3,142

3.3. African Concrete blocks is a company that manufactures square concrete blocks. The diagram below shows the six steel moulds that they use to make the square concrete blocks.

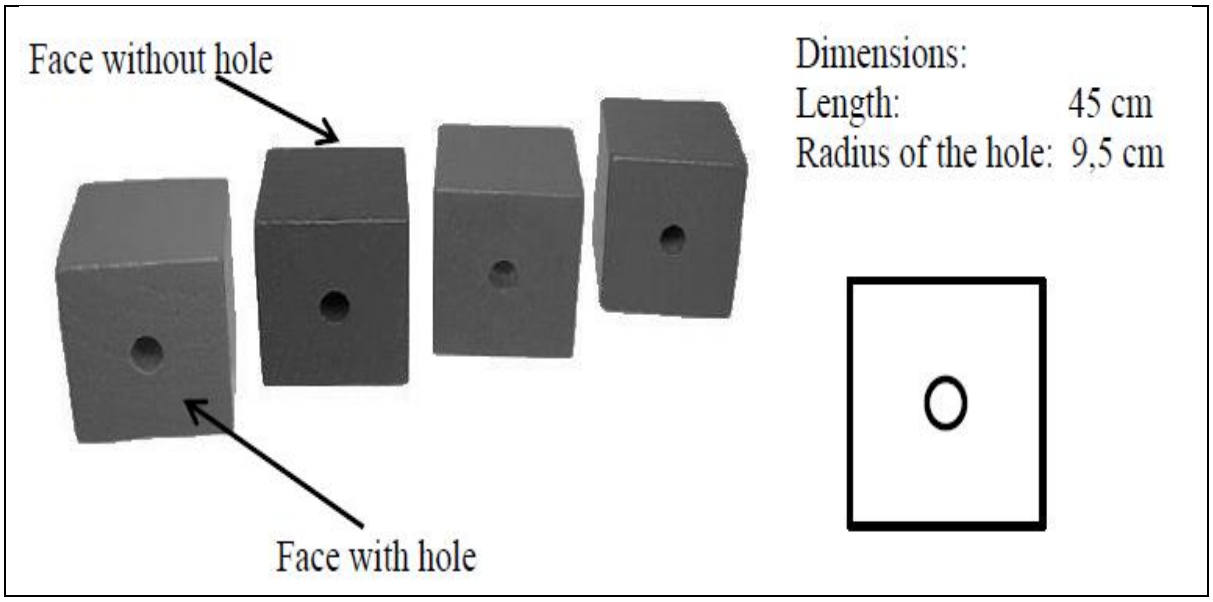


Use the diagram above to answer the questions that follow.

3.3.1. Explain the meaning of *volume*. (2)

3.3.2. Calculate ($in\ m^3$) the volume of ONE concrete block.
You may use the following formula:
Volume $= \boldsymbol{side \times side \times height}$ **(**3)

3.4. The Bambanani Crèche in Bethlehem bought the cubic blocks below from an auction. They have a side length of 45 cm. On two opposite sides of the block is a circular hole in the face of the block. They want to use the blocks as chairs for the children.



3.4.1. They intend painting the chairs green with Dulux all-purpose paint.

a) Calculate the area (in cm2) of ONE of the faces of the block that does not have a circular hole.

You may use the following formula:

Area of square $= \boldsymbol{side \times side}$ **(**3)

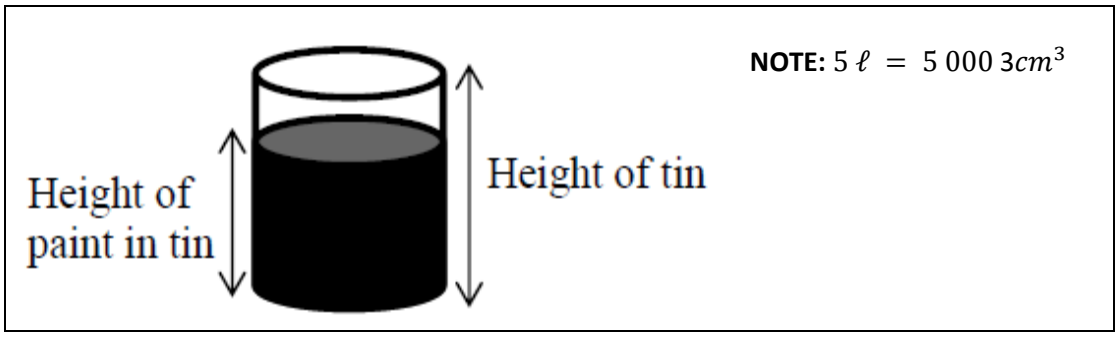
b) Show that the total surface area (area of the faces with circular holes + area of the faces without circular holes) $= 11\,582{,}869\ cm^2$.

You may use the following formula:

Area of circle $= \boldsymbol{\pi \times r^2, and\ using\ \pi = 3{,}142}$ (5)

3.4.2. The paint has a spread rate of 1,8 mℓ of paint per 15 cm^2.Calculate the total amount of paint, rounded to the nearest litre, needed to paint 12 chairs with ONE coat of paint. (4)

3.4.3. The paint is sold in 5 ℓ tins. Each tin has a radius of 7 cm and a height of 35 cm.



a) Write down the diameter of the tin. (2)

b) Calculate the height of the paint in the tin:

You may use the following formula:

Volume of a cylinder $= \boldsymbol{\pi} \times (\boldsymbol{r})^2 \times \boldsymbol{height},\ \ \boldsymbol{where}\ \boldsymbol{\pi}\ =\ \mathbf{3,142}$ **(**3)

POSSIBLE QUESTION 3'S IN PAPER 1: Adapted from 2019 Nov NSC Paper1

3.5. Aunt Abby will bake the wedding cake. She will be using a recipe from a recipe book published in England.

Note:

- $1\ kg\ =\ 2{,}25\ pounds$
- $1\ ml\ flour\ =\ 0{,}7\ g\ flour$

3.5.1. Aunt Abby needs 3 and a half pounds of butter.
Determine the mass of butter in kilogram. (2)

3.5.2. Aunt Abby only has a kitchen scale available. If aunt Abby needs 625 ml of flour, determine the mass of the flour in grams. (2)

3.5.3. The cake must be baked at $356°\text{F}$. Determine to what degree Celsius the oven should be turned. You may use the following formula:

$$°\text{C} = (°\text{F} - 32°) \div 1{,}8$$ (2)

POSSIBLE QUESTION 3'S IN PAPER 1: Adapted from 2019 June NSC Paper1

3.6. The table below represents the time taken by a player and teams to solve a magic cube. Study the table below and answer the questions that follow.

TAKE NOTE:

•Player time is the time taken by a player to solve the magic cube once.

•Team time is the total time taken by all players in a team to solve a magic cube once.

Rank	Players	Player time	Rank	Team	Team time
1	Zoë	10,8 seconds	1	A	6 minutes 53 seconds
2	Enrique	13,6 seconds	2	B	7 minutes 44 seconds
3	Thabang	16,1 seconds	3	C	9 minutes 11 seconds
4	Koos	23,1 seconds	4	D	9 minutes 17 seconds
5	Bongani	23,2 seconds	5	E	9 minutes 23 seconds
6	Lee	23,9 seconds	6	F	9 minutes 28 seconds
7	Thulani	24,3 seconds	7	G	9 minutes 41 seconds
8	Liam	24,8 seconds	8	H	9 minutes 49 seconds
9	Gregory	26,7 seconds	9	I	9 minutes 59 seconds
10	Olivia	29,3 seconds	10	J	10 minutes 13 seconds

3.6.1. Convert the A team's time taken to solve the magic cube to seconds. (2)

3.6.2. Calculate the total time taken by the ten players to solve the magic cube. Give your answer in minutes and seconds. (4)

3.7. Onke wants to buy a cricket kit. **TABLE 7** shows information that guides a player on sizes to buy. The sizes are indicated in feet (') and inches (")

TABLE 7: INFORMATION GUIDE ON SIZES

Bat size	Height of batsman (feet ' and inches ")	Bat length (inches ")	Bat Width (inches ")
2	4' 3" – 4' 6"	$27\frac{3}{4}$"	3,5 "
3	4' 6" – 4' 9"	$28\frac{3}{4}$"	3,5 "
4	4' 9" – 4' 11"	$29\frac{3}{4}$"	3,75 "
5	4' 11" – 5' 2"	$30\frac{3}{4}$"	4 "
6	5' 2" – 5' 5"	$31\frac{3}{4}$"	4 "

3.7.1. Write down the cricket bat length (in decimal inches) for a batsman whose height is $4' 10''$.

2

3.7.2. Convert a size 2 bat width to centimetres (cm).

You may use: $1'' = 2{,}54\ cm$ (3)

3.7.3. Identify the maximum height of a player who bought a cricket bat size 6.2

3.7.4. Calculate the Body Mass Index (BMI) of a cricket player who has a height of $1{,}65\ m$ with a weight of $62\ kg$.

You may use the following formula: $\mathbf{BMI} = \frac{weight\ in\ kilograms}{(height\ in\ metres)^2}$ (2)

POSSIBLE QUESTION 3'S IN PAPER 1: Adapted from GP 2019 Prelim Paper1

3.8. Thapelo uses a bakkie (as shown on the picture below) to transport the tyres to his house.

Bakkie bin

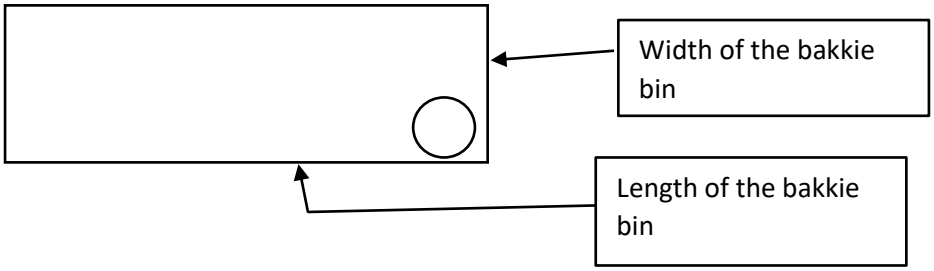
The dimensions of the bakkie bin are given below:

Length = 303,5 cm

Width = 173 cm

Height = 35,5 cm

The tyres will be packed in the bakkie bin as shown on the picture below:



Use the information above to answer the questions that follow.

3.8.1. Determine the total number of tyres that can be packed along:

a) The width of the bakkie bin. (3)

b) The height and length of the bakkie bin

Remember: Diameter of the tyre $= 58\ cm$ (5)

3.8.2. Hence, calculate the total number of tyres that can be packed in the bakkie bin. (2)

END OF QUESTION 3'S

SECTION 4: MAPS, PLANS AND OTHER REPRESENTATIONS OF THE PHYSICAL WORLD

Overview

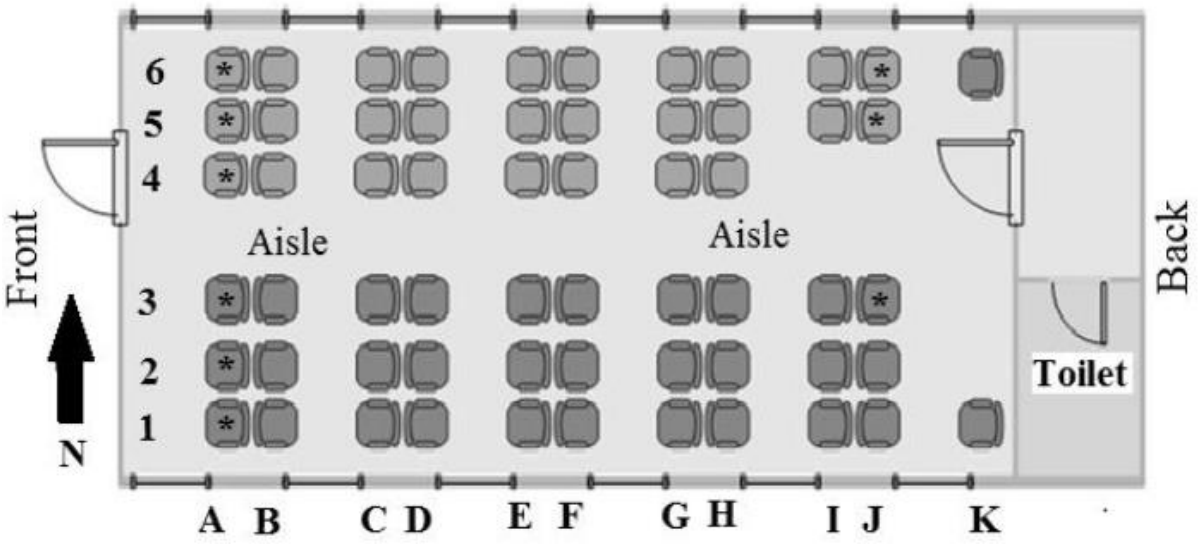
- Question 4 focuses on Maps, Plans and other representations of the physical world, Probability may be Integrated in this section.
- Maps, plans and other representations of the physical world section in the whole paper weighs approximately 20 marks
- The following Sub-sections should be covered under Maps, Plans and other representations of the physical world.
  - Scales
  - Seating plans / layout of a classroom/stores in shopping centres.
  - Seating plans in cinemas and sports stadiums, matric dance, etc.
  - Street maps with or without grid reference.
  - National and Provincial road and rail maps.
  - Strip charts and Distance charts.
  - Elevation maps – e.g. Comrades marathon route.
  - Residential or housing estate.
  - Plans: Instructions and Assembly diagrams containing words or pictures.
- In preparing learners for Exams, please ensure the learners are able to:
  - Read information directly from a map/ table and use some given information and simple operations to answer the questions;
  - Measure values which involve length, distance using measuring instruments sensitive to levels of accuracy in a familiar context;
  - Convert units of measurement between different scales and systems using provided conversion tables.

Exam Tips

- Exam tips for both teachers and learners
  - Educators to give learners more practice on questions involving general directions and questions on a given set of directions.
  - The interpretation of compass directions in the context of appropriate maps and plans must be taught in grade 12.
  - Teachers please note that when a scale is given there is every chance that actual measurements/distance will be required.
  - Learners should be afforded the opportunity to practice measuring on a regular basis, e.g. use a ruler to measure length of a textbook, table, etc.
  - Scales should be taught well to enable learners to interpret and make sense of maps and plans.
  - Learners should be taught the symbols and notations used on plans.
  - Section of time should be given attention in class, learners are expected to convert units of measurement of time from memory. E.g. years to days, etc.

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from 2019 June NSC Paper1

4.1. The seating plan below represents the seating arrangement in a coach of a train.



KEY :

	Window
	Door
	Seat without power socket
*	Seat with a power socket

Use the information above to answer the questions that follow.

4.1.1. How many passengers can be seated in ONE coach? (2)

4.1.2. Write down the number of the seat close to the window and the toilet. (2)

4.1.3. In which general direction is the toilet from seat B6? (2)

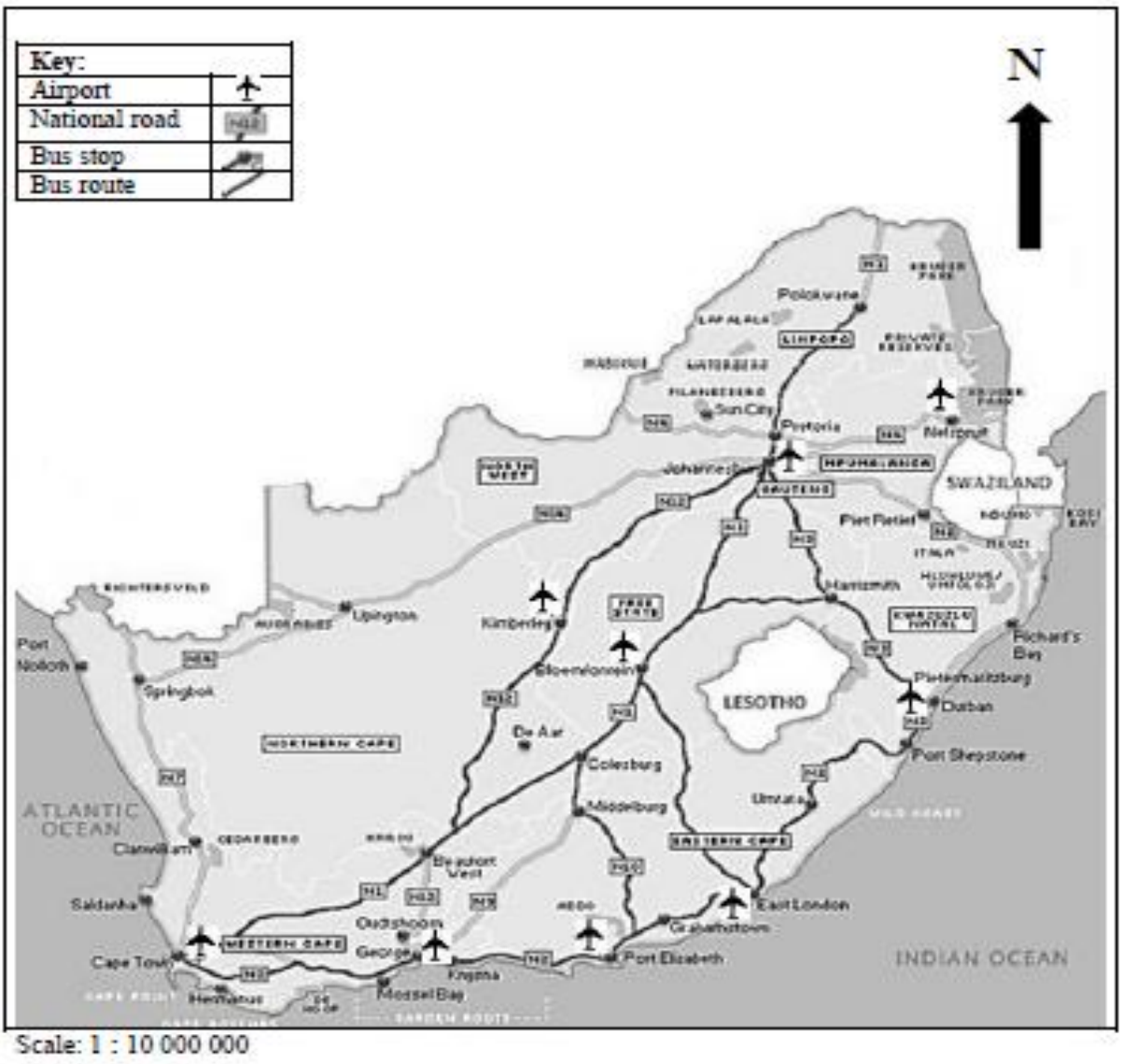
4.1.4. Determine the probability (as a percentage) of randomly selecting a seat with a power point in this coach. (3)

4.1.5. A man seated on seat J2 uses the following route to move to another seat:

- From J2 turn left and walk towards the aisle
- He turns left and continue straight until he reaches the front of the coach
- He then turns right and sits in the middle seat

Write down his new seat number. (2)

4.2. The diagram below shows the map representing the routes of a South African bus company.



Use the map above to answer the questions that follow.

4.2.1. How many airports are along the bus routes? (2)

4.2.2. Explain the meaning of the given scale. (2)

4.2.3. Calculate the actual distance, in km, from Mossel Bay to East London if the distance on the map is 60 mm. (3)

4.2.4. The bus took 7 hours 26 min to travel from Bloemfontein to Grahamstown.

Calculate the average speed (in km/hour) the bus travelled if the distance from Bloemfontein to Grahamstown is 597 km.

You may use the following formula:

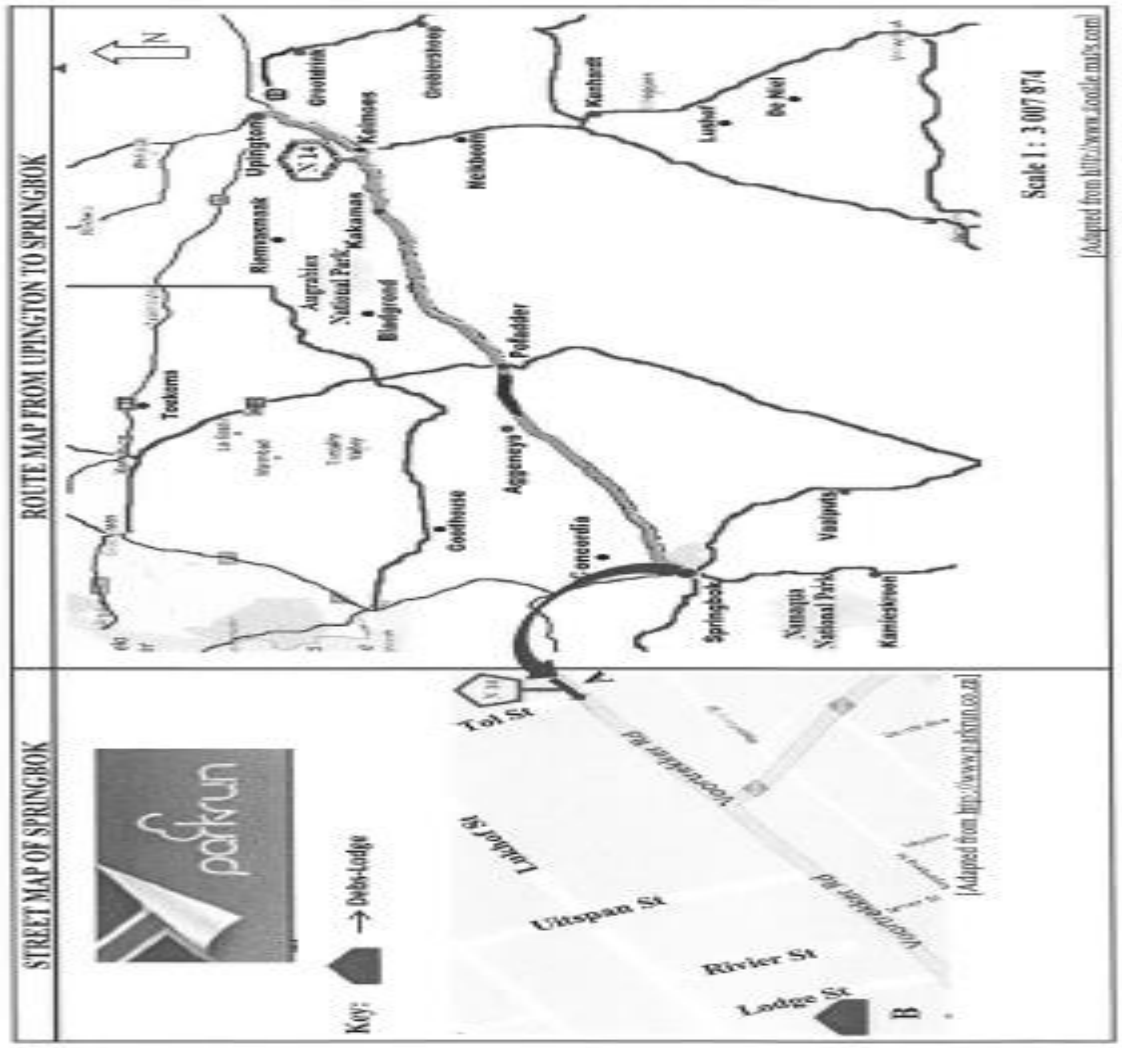
$$\boldsymbol{Speed = \frac{Distance}{Time}}$$ (3)

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from 2018 Nov NSC Paper1

4.3.

A parkrun is a weekly 5 km run. A group of runners drove from Upington to Springbok to take part in the weekly parkrun in Springbok.

Diagram below shows a route map from Upington to Springbok.



Use the map in the previous page to answer the questions that follow:

4.3.1. Give the general direction from Upington to Springbok. (2)

4.3.2. Write down the name of the national park close to Kamieskroon. (2)

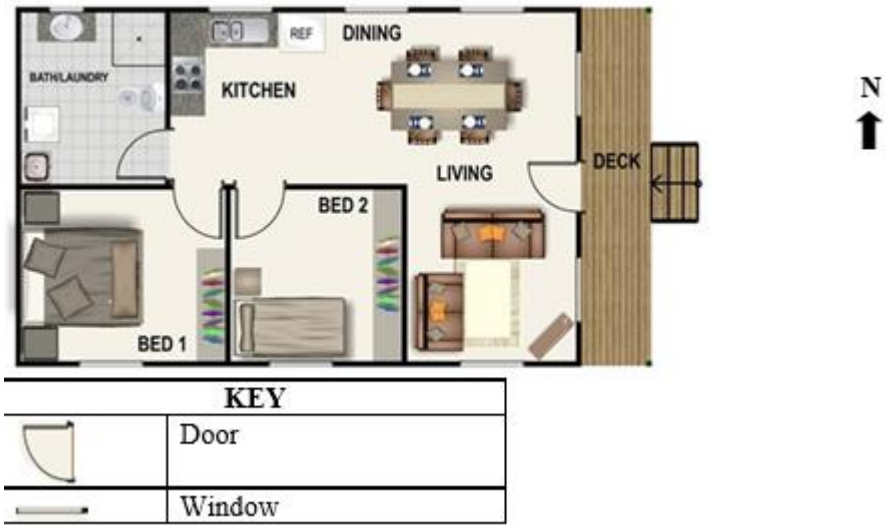
4.3.3. Name TWO towns the runners will pass through on their way to Springbok, following the N14.

4.3.4. Identify the type of scale used on the map. (2)

4.3.5. Use the given scale to determine the actual distance (to the nearest km) between Upington and Springbok. (4)

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from FS 2019 Prelim Paper1

4.4. A floor plan of one of the chalets at the resort is indicated below.



KEY	
	Door
	Window

Use the information above to answer the following questions

4.4.1. Explain the meaning of the term floor plan. (2)

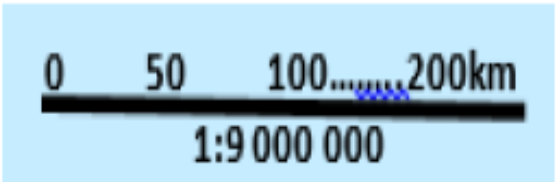
4.4.2. Determine the number of interior doors found on the plan. (2)

4.4.3. Write down the ratio of the number of rooms to the number of windows found on the plan, in the form 1 : 3

4.4.4. Identify the exterior wall that does not have windows. (2)

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from FS 2019 Prelim Paper1

4.5. There are two types of showing a scale on a map and both are shown below.



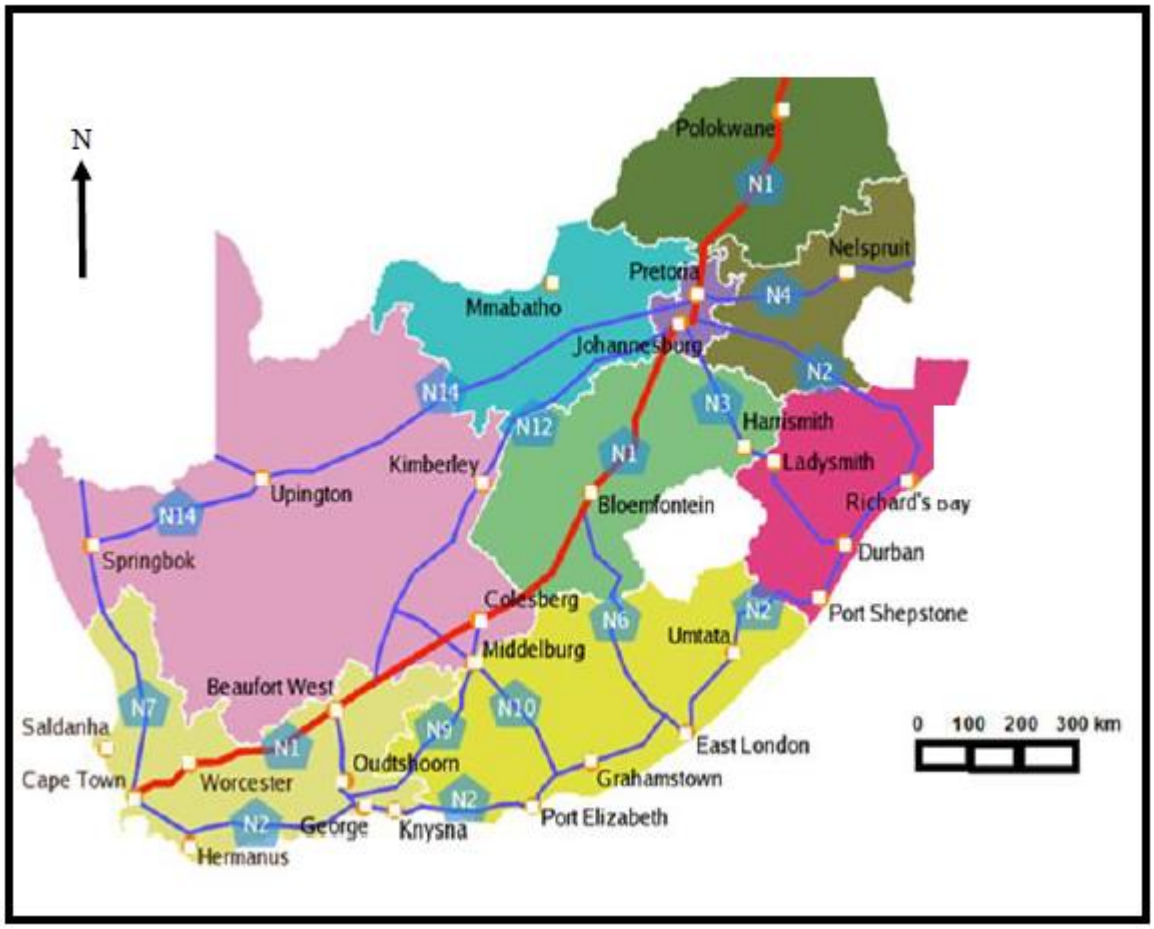
Use the information above to answer the questions that follow.

4.5.1. Name the two types of scales shown above. (2)

4.5.2. Explain what the scale 1:9 000 000 means. (2)

4.6. Thabo and friends use the map below to plan their trip from Pretoria to Cape Town.

MAP: A MAP OF SOUTH AFRICA SHOWING THE NATIONAL ROADS.



Use the information above to answer the questions that follow.

4.6.1. Determine the total number of national roads shown on the map. (2)

4.6.2. Give the general direction of Port Shepstone from Bloemfontein. (2)

4.6.3. Give one road that Thabo and friends can use from Pretoria to Cape Town without changing to other roads that lead to Cape Town. (2)

4.6.4. Name two national roads that lead to Cape Town from Pretoria via Springbok. (2)

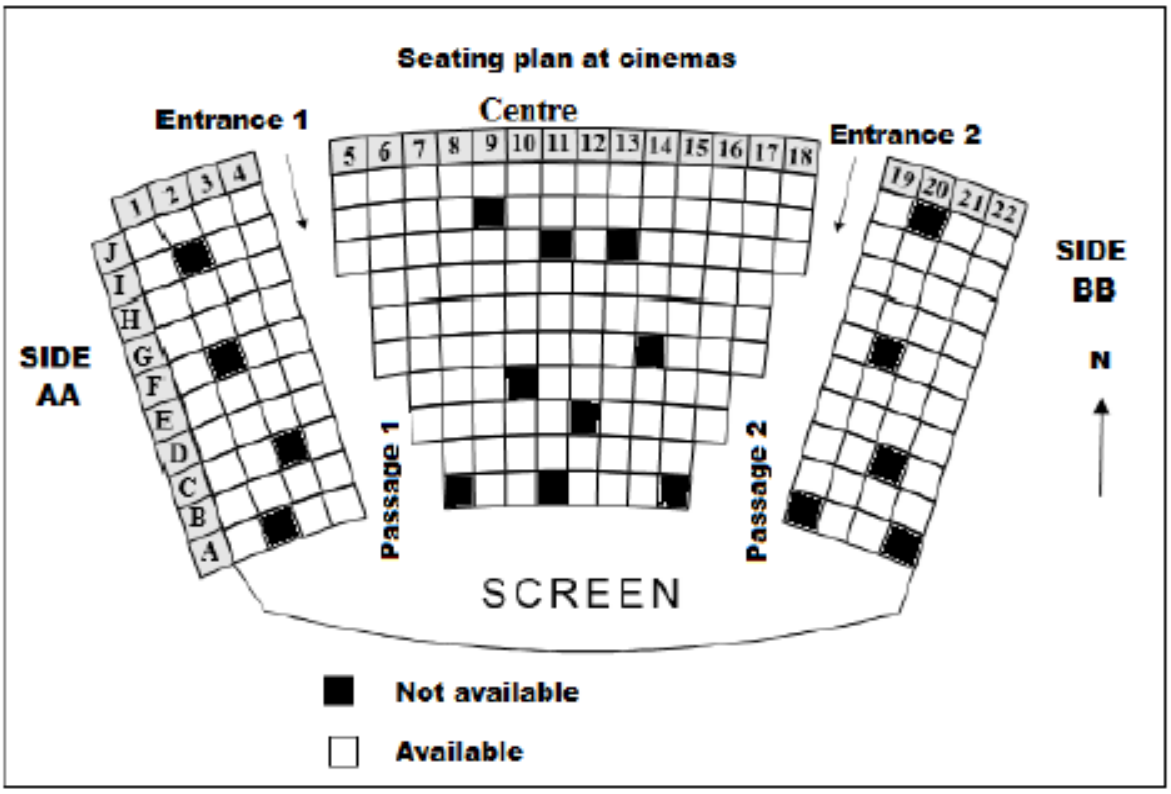
4.6.5. Thabo and friends will travel from Pretoria along N1, pass the first city, pass the second city and take a rest at the third town, which town is that? (2)

4.6.6. Calculate the actual distance (to the nearest km) between Pretoria and Cape Town if approximately 128 mm is the distance measured on the map. The length of the bar scale is approximately 27 mm. (5)

4.6.7. Use the distance calculated in 4.1.6 above to determine the number of litres of petrol they will need for a single trip if their car consumes 5,9 litres per 100 km. (3)

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from EC 2018 Prelim Paper1

4.7. Study the cinema seating plan below and answer the questions that follow.



4.7.1. Lundi holds a ticket numbered K4 and enters the cinema using entrance 2. Assist Lundi to find his seat. (2)

4.7.2. In which general direction does seat J5 face? (2)

4.7.3. Allocate seat numbers for the seats that are not available on the front row at the centre of the cinema. (3)

4.7.4. Write down the total number of available seats on the north-eastern side of the screen. (2)

4.7.5. Asi gets into the cinema through entrance 1. She goes down the passage, enters the second front row on her left and takes the second last seat. Write down Asi's seat number. (2)

4.7.6. Identify the row furthest from the screen. (2)

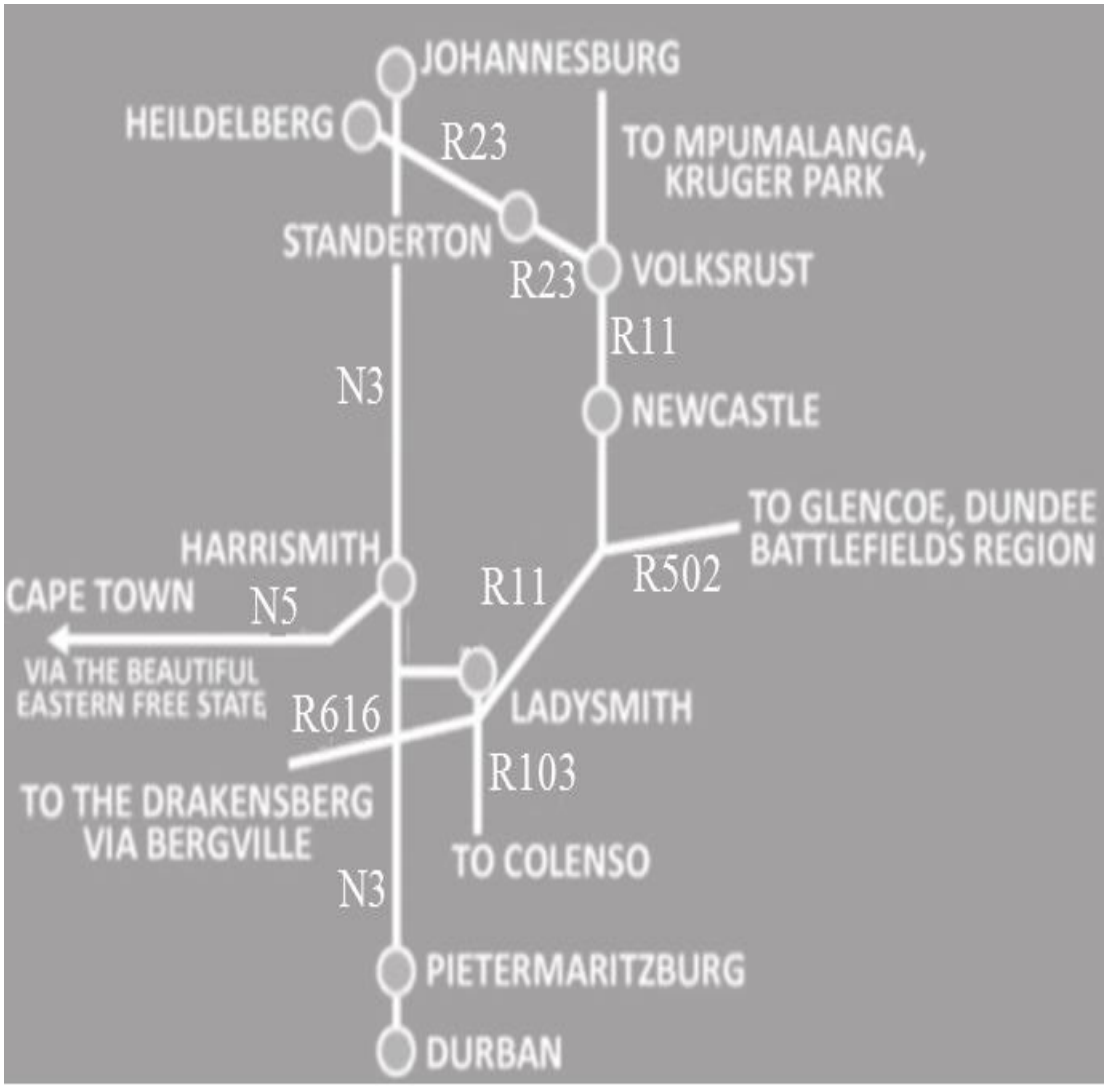
4.7.7. Write down the side with the least number of available seats. (2)

4.7.8. Write down the side with the least number of available seats. (2)

4.7.9. Write down the probability of randomly selecting a seat with letter G from the total seats. Give your answer as a decimal fraction. (3)

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from FS 2018 Prelim Paper1

4.8. Study the map below and answer the questions below.



4.8.1. What type of a map is indicated above? (2)

4.8.2. Which road(s) can be used to travel from Heildelberg via Volksrust to Newcastle? (2)

4.8.3. Identify the towns on route between Johannesburg and Durban using only the national road. (2)

4.8.4. A driver travelling at an average speed of 110km/h left Durban at 13:30 and arrived at 19:30 in Johannesburg. Calculate the distance travelled. (3)
The following formula may be used:

$$\boldsymbol{Speed} = \frac{\boldsymbol{Distance}}{\boldsymbol{Time}}$$

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from WC 2018 Prelim Paper1

4.9. Stewart used the strip map of the route from East London to Harrismith on the next page while planning his trips around the Free State, Eastern Cape and Lesotho.

TABLE 3 below accompanies the strip map on the next page

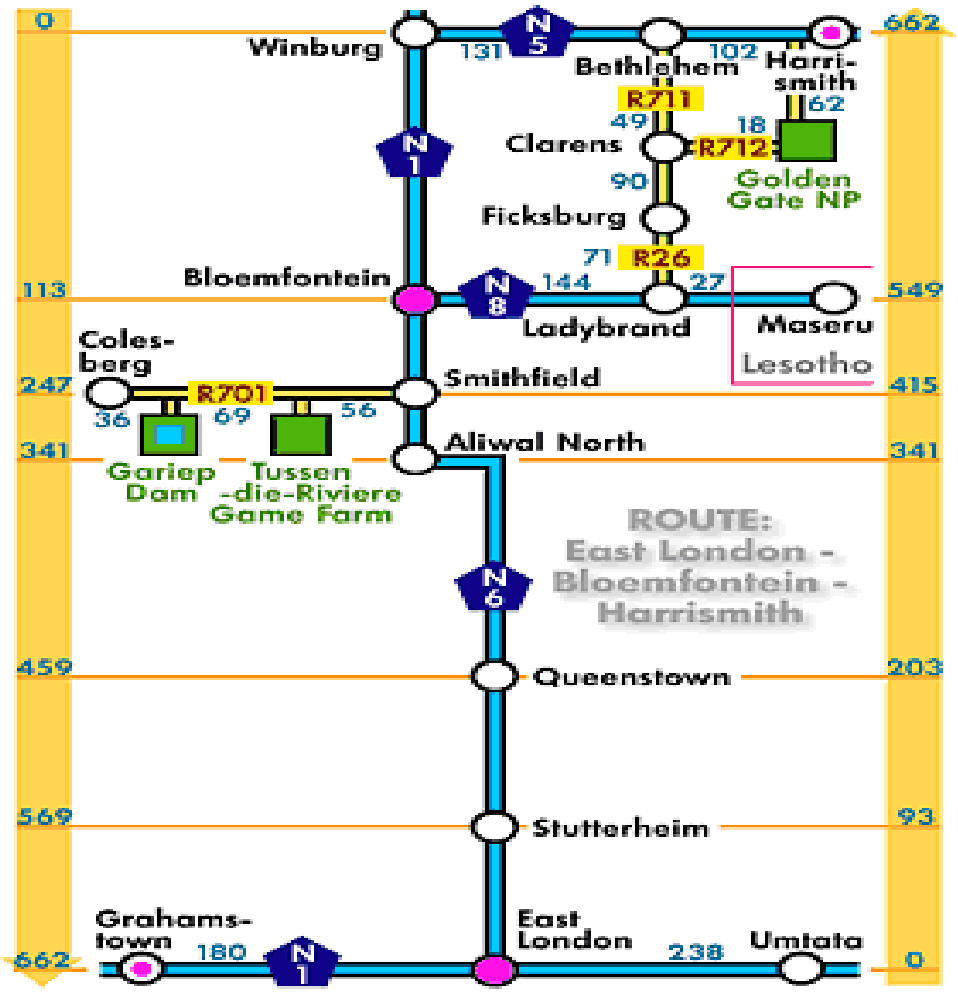


TABLE 3: Directions

Key	Description of route
A	Turn left onto N1 pass, Bloemfontein
B	Then travel 56 km to the destination
C	Turn right at Smithfield
D	Travel along N5 to the N1

4.9.1. Use the key (A – D) in the table above to write directions for the journey from Bethlehem to the Tussen-de-Riviere Game Farm. (4)

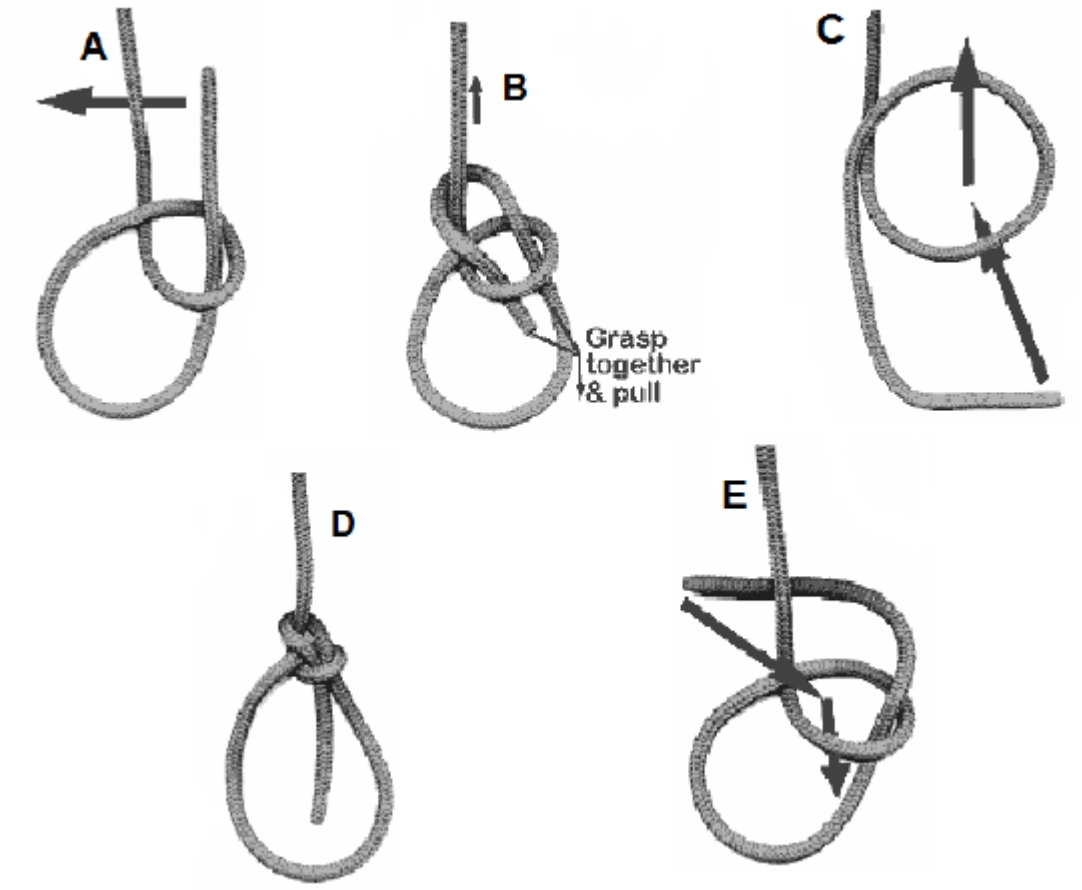
4.9.2. Calculate the distance travelled from Bethlehem to Tussen-die-Riviere Game Farm passing Winburg. (2)

4.9.3. How many National roads are indicated on the strip chart? (2)

POSSIBLE QUESTION 4'S IN PAPER 1: Adapted from WC 2018 Prelim Paper1

4.10. The bowline is a knot that's used to form a fixed loop on the end of a rope. In sailing, it's commonly used to attach a line to the head of a sail.

The pictures below show how to tie a bowline. The pictures are not in the correct order.



Arrange the pictures in the correct order. 3

END OF QUESTION 4'S

SECTION 5: DATA HANDLING

QUESTION 5

Overview

- Question 5 focuses on Data Handling, Probability may be Integrated in this section.
- Data Handling section in the whole paper weighs 25% (+-5%)
- The following Sub-sections should be covered Data handling.
  - Classifying and organising data.
  - Summarising data.
  - Representing data.
- Probability: Expressions of probability/prediction/evaluate expressions of probability.

Exam Tips

Exam tips for both teachers and learners

- Educators to place emphasis on the theory of Data handling.
- Teachers should teach learners to read, select and analyse data presented in different in different types of graphs in order to answer questions relating to the data.
- Learners should be exposed to writing out big numbers (Hundred thousands, Millions, Billions, etc) and doing calculations with percentages.
- Teachers should emphasise the difference between a histogram and a bar graph and plotting points correctly on the graph.

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from NW 2018 PRELIM Paper 1

5.1. Only 15 backpackers are allowed to descend into the Canyon per day. The table below gives information of the first group of packers.

DATA ON BACKPACKERS

BACK-PACKER	MALE/FEMALE	MASS OF BACKPACK(KG)	AGE OF BACKPACKER
1	F	17,8	37
2	M	22	43
3	F	14,8	21
4	F	15,2	34
5	F	13	15
6	M	22	20
7	M	18,5	39
8	M	21,3	44
9	F	19,7	43
10	M	25	29
11	F	13,8	25
12	F	18,5	50
13	M	18,5	18
14	M	23,1	52
15	M	14,7	16

Use the table above to answer the following questions:

5.1.1. Determine the weight of the oldest backpacker's backpack. (2)
5.1.2. Arrange the mass of the backpacks in ascending order. (2)
5.1.3. Determine the modal mass of the backpacks. (2)
5.1.4. Determine the median weight of the backpacks. (2)
5.1.5. Write down the information of the youngest backpacker. (3)
5.1.6. Calculate the range of the ages of the backpackers. (2)
5.1.7. Calculate the mean age of the backpackers. (3)
5.1.8. Determine the ratio of male to the female backpackers. (2)
5.1.9. Determine the probability of randomly choosing a backpack that weighs more than 20 kg. Write your answer as a simplified fraction. (3)

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from WC 2019 PRELIM Paper 1

5.2.

The number of learners, teachers and schools in the school sector of South Africa is indicated per province for 2016 in TABLE 4.

TABLE 4: LEARNERS, TEACHERS AND SCHOOLS PER PROVINCE IN 2016 IN THE SOUTH AFRICAN SCHOOL SECTOR

	PUBLIC SCHOOLS			PRIVATE SCHOOLS		
PROVINCES	LEARNERS	TEACHERS	SCHOOLS	LEARNERS	TEACHERS	SCHOOLS
Eastern Cape	1 898 723	58 372	5 469	62 824	3 257	207
Free State	671 712	22 465	1 214	16 637	1 058	68
Gauteng	2 048 558	63 092	2 083	278 026	18 986	730
Kwazulu-Natal	2 808 137	84 810	5 895	69 407	4 989	247
Limpopo	1 706 725	51 650	3 867	58 830	2 768	151
Mpumalanga	1 046 234	34 034	1 725	28 118	370	122
Northern Cape	287 435	8 841	545	4 080	295	30
North West	811 340	24 876	1 471	19 207	1 232	63
Western Cape	1 063 349	33 254	1 450	53 223	4 264	237
South Africa	**12 342 213**	**...**	**23 719**	**590 352**	**37 219**	**1 855**

[Adapted from: www.dbe.gov.za]

Use TABLE 4 and the information above to answer the questions that follow.

5.2.1. Which province had the most learners in private schools in 2016? (2)

5.2.2. Determine the mean number of teachers per province for public schools and indicate which provinces have less than the mean number of teachers per province for public schools. (4)

5.2.3. Determine the median value of teachers per province for private schools. (2)

5.2.4. Calculate the range for the number of learners in public schools for all nine provinces. (2)

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from KZN 2018 PRELIM Paper 1

5.3. Mr Naidoo owns a car wash and he decides to observe different types of cars that come for a wash on a Saturday and Sunday. The table below shows his findings.

TABLE 4: SHOWING TYPES OF CARS WASHED AT A CAR WASH ON SATURDAY AND SUNDAY

Type of car	Number of cars washed on a Saturday	Number of cars washed on a Sunday
Toyota	14	20
BMW	8	14
Ford	16	11
Chevrolet	11	17
Honda	8	5

Use the information above and TABLE 4 to answer the questions that follow.

5.3.1. Which method of data collection did Mr Naidoo use to collect data? (2)

5.3.2. State whether the number of cars washed is discrete or continuous (2)

5.3.3. Calculate the number of cars that were washed altogether on Saturday and Sunday? (2)

5.3.4. What is the probability (as a decimal fraction) of the worker washing a Toyota car on a Sunday? (2)

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from EC 2018 PRELIM Paper 1

5.4. Needo Angling Club had two club competitions, an overnight at Bridal Drift Dam in August and a day competition at Nahoon Dam in September 2017.

AUGUST COMPETITION BRIDAL DRIFT DAM		Hours worked for both competitions	SEPTEMBER COMPETITION NAHOON DAM	
Weight (kg)	Number of fish		Weight (kg)	Number of fish
1,26	2	1st	0,182	3
1,371	9	2nd	0,309	1
1,668	8	3rd	0,729	3
1,746	4	4th	0,856	4
1,849	8	5th	0,936	1
2,163	1	6th	2,448	2
2,333	1	7th	2,449	1
3,128	2	8th	3,038	1
		9th	3,316	6

5.4.1. Determine the range for the weights in the September competition. (3)

5.4.2. Write down the median weight for the August competition. (2)

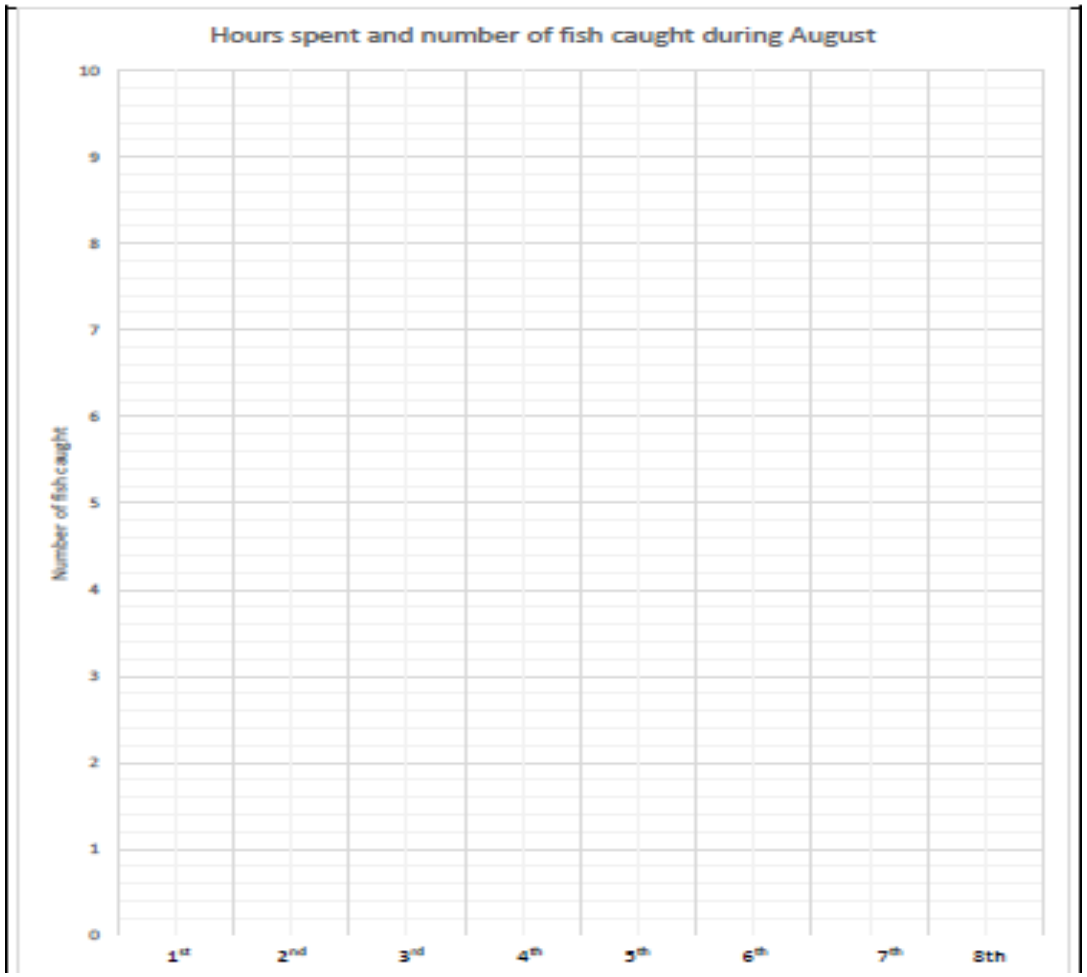
5.4.3. Calculate the average weight for all the fish caught during the August competition. Give your answer to the nearest kilogram. (3)

5.4.4. Calculate the total number of fish that were caught during the day competition. (2)

5.4.5. Express as a percentage the probability of randomly selecting a fish that weighs 1,849 kg from the August competition. (3)

5.4.6. Use the information from the August competition to draw a bar graph on the ANSWER SHEET below. (6)

ANSWERSHEET



5.4.7. Determine the third (upper) quartile for the September competition. (3)

5.4.8. Determine the modal weight for the September competition. (2)

5.4.9. Express the number of fish with a weight of 1,668 kg as a percentage of the total fish caught during the competitions. (3)

5.4.10. Identify the hour at which the most number of fish was caught. (2)

5.4.11. Arrange the number of fish caught during the September competition, in ascending order. (2)

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from GP 2019 PRELIM Paper 1

5.5. The data in the table below represent the distance (in km) that the learners from Exhibition High School walked to school the morning before a Mathematical Literacy test.

Use the data below to answer the questions that follow.

TABLE 2 : Distance (in km) travelled by learners

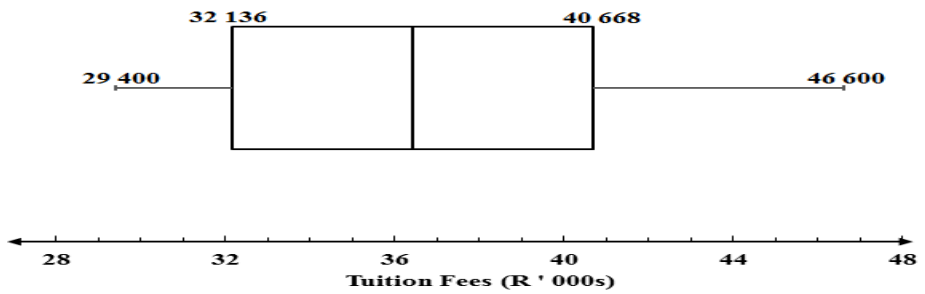
0,2	**0,5**	**0,3**	**1,2**	**0,25**
0,75	**1,3**	**3**	**1,2**	**1,8**
2,4	**1,5**	**0,2**	**0,8**	**2,6**
3	**1,4**	**0,75**	**0,5**	**1,2**
3,2	**0,8**	**0,3**	**1**	**1,8**

Use the distance values from the table above to complete the given frequency table below.

Distance (in km)	Tally	Frequency
0 – 0,5		
0,6 – 1		
1,1 – 1,5		
1,6 – 2		
2,1 – 2,5		
2,6 – 3		
3,1 – 3,5		
TOTAL:		

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from WC 2018 PRELIM Paper 1

5.6. The box-and-whisker plot below represents the tuition fees of a certain degree of various universities in South Africa.

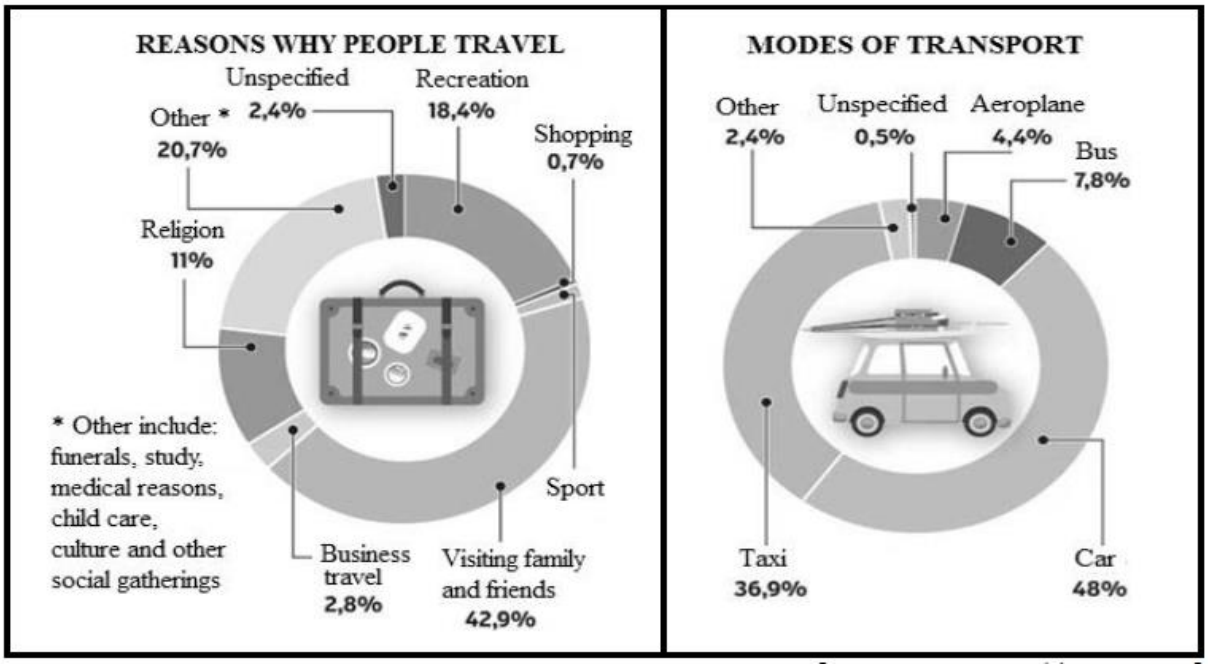


(a) Determine the interquartile range (IQR). (2)

(b) Estimate the value of the median. (2)

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from 2019 JUNE NSC Paper 1

5.7. The TWO pie charts below show why and how people in South Africa travel.



Study the TWO pie charts above and answer the questions that follow.

5.7.1. Calculate the percentage of people whose reason for travel is sport. (2)

5.7.2. Which mode of transport is used by most people? (2)

5.7.3. Determine the probability (written as a fraction in its simplest form) of randomly selecting a person whose mode of transportation is travelling by bus. (3)

5.7.4. A total of 542 267 people took part in this survey. Calculate the number of people who travel to visit family and friends. (2)

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from Nov 2018 NSC Paper 1

5.8. During certain seasons in South Africa, the wind can lead to fires that cause large damages. The fire losses in South Africa for the period 2010 to 2015 are shown in the table below.

TABLE 4 : LOSSES CAUSED BY FIRE FOR THE PERIOD 2010 TO 2015

	2010	2011	2012	2013	2014	2015
Total loss in rand (in millions)	1 323	2 085,6	3 162	2 158	1 847	2 732
GNI (in thousand millions)	2 608,5	2 897,6	3 066	3 441	3 694	3 913
Fire loss as a % of GNI	0,05%	0,07%	0,103%	A	0,05%	0,07%
Number of fires (in thousands)	26,5	37,7	41,4	42,3	46,1	45,7
Population (rounded) (in million)	49,9	51,7	52,2	52,9	53,5	54,3

Study table 4 above to answer the questions that follows

5.8.1. Write the total loss, in rand, caused by fire in 2011. (2)

5.8.2. Calculate the mean total loss, in rand, caused by fires for the period of 2010 to 2015. (3)

5.8.3. Identify the maximum number of fires for the period 2010 to 2015. (2)

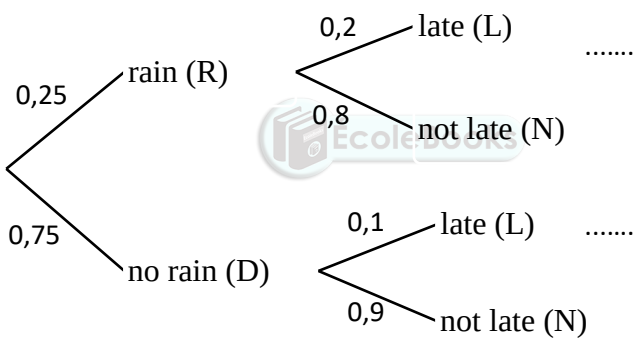
5.8.4. Calculate the value of A, the fire loss as a percentage of the GNI for 2013. Round off your answer to two decimal places. (4)

POSSIBLE QUESTION 5'S IN PAPER 1: Adapted from June 2017 NSC Paper 1

5.9.

A school kept records of all the learners that arrived late for school. The Mathematical Literacy teacher noticed that the late arrival is influenced by the occurrence of rain.

The tree diagram below was drawn to show the outcomes and probability of late arrivals when the chance for rain is 25%.



R , L		0,05
(a)		0,2
(b)		0,075
D , N		0,675

[Adapted from*SASAMS 2016*]

Study the tree diagram and answer the questions that follow.

5.9.1. Write down the percentage of learners who arrives late if it does not rain. (2)

5.9.2. Write down the missing outcomes (a) and (b). (4)

5.9.3. Write down the probability (as a simplified common fraction) of randomly selecting a learner who arrived late for school on a rainy day. (2)

5.9.4. If the school has 1 562 learners, determine how many learners will not be late if the chance for rain is 25%. (3)

END OF QUESTION 5'S

END OF PAPER 1 EXAM TYPE QUESTIONS

MATHEMATICAL LITERACY

- There are two externally set examination papers in grade 12
- **Objective of each paper:**
  - **Paper 1** (Refer to Page 3) is a basic skills paper assessing **Application Topics**: Finance, Measurement, Maps, Plans and Other representations of the physical world
  - **Paper 2** is an application paper assessing integration of application topics

PAPER 2

STRUCTURE OF PAPER 1 QUESTION PAPER

- It is a 3-hour long paper, with a total mark allocation of 150.
- The paper has **Four to Five questions:**

Cognitive Level	EXPLANATION	Marks
Level 2	Applying routine procedures in familiar contexts	Approx. 42 Marls
Level 3	Applying multi-step procedures in a variety of contexts	Approx. 55 Marls
Level 4	Reasoning and reflecting	Approx. 45 Marls
NB: **Probability** (approx. 8 marks) will be integrated across contexts		

Overview

- Paper 2 is an application paper testing skill to use both mathematical and non-mathematical methods to engage with familiar and unfamiliar contexts.

Exam Tips

- Learners should reinforce the concept of using VAT inclusive to find the VAT exclusive price can translate to other problems where a previous value is required.
- No compound interest formula in Math Lit.
- Exposed learners to various types of maps, plans and other representations
- Learners should be able to read different directions when travelling between two places.
- Before calculating perimeter, area, volume or surface area, the units of the dimensions should be the same
- If the dimensions are given in different units then they must first be converted to the same units.
- Learners should be able to convert parts of an hour to minutes and vice versa
- Learners should know how to write big numbers like billions fully
- Learners should be exposed to questions involving two or more formulae.
- Learners should revise the concepts of measures of spread and measures of central tendencies.
- Learners should first make sense of the information before attempting the questions.
- Learners should be made aware that not all formulae will be given, and therefore they should know the formula for percentage change.
- In all verification questions, learners must provide calculations to justify their answers.

SECTION 6

PART ONE OF EXAM TYPE QUESTIONS: Possible Questions in Paper 2

QUESTION 2: Adapted from NSC 2018 March Paper 2

2.1 ANNEXURE B shows the credit card statement of Mr Son.

Use the information in ANNEXURE B to answer the questions that follow.

2.1.1. Determine the number of days covered by this credit card statement. (2)

2.1.2. Use the transaction details and show, with calculations, how the closing balance was determined. (5)

2.1.3 Explain why the bank omitted some digits from the account number on the statement. (2)

2.1.4 The bank offers an insurance option on the outstanding balance of the credit card account by charging a rate of R3,50 per R1 000 (or part thereof) on the outstanding balance. (5)

Calculate how much Mr Son would have paid for insurance on the outstanding balance of this statement if he had chosen this option

2.1.5 Give ONE possible reason why Mr Son might purchase goods using his credit card instead of paying cash for the goods. (2)

2.1.6 Give ONE possible reason why Mr Son might purchase goods using his credit card instead of paying cash for the goods. (2)

2.2 Mr Son travelled from his home directly to a bank 34 km away. He travelled at an average speed of 85 km per hour and arrived at the bank at 12:10.

Verify, showing ALL calculations, whether Mr Son left his home at exactly 11:40.

The following formula may be used:

Distance = average speed × time (5)

ANNEXURE B **QUESTION 2.1**

CREDIT CARD STATEMENT OF MR SON

RST BANK LTD			**Card Division**		
Mr J Son 21 Lost Street Greentown 2415			PO Box 789 Greentown 1098		
					Gold Credit Card **Account number 2456 **** ****0223**
	Statement Details				
	Statement Date				25 Feb. 2017
	Statement Period				25 Jan. 2017 to 25 Feb. 2017
	Statement Frequency				Monthly
	Statement Number				32
Payment Information					
	Total amount outstanding on this statement				42 452,87
	Minimum payment due				1 273,58
	Payment due date				22 Mar. 2017
	Credit limit				92 500
	Available money to spend				50 047,00
Account Summary					
	Balance brought forward				–37,81
	Payments and credits				200,01
	Purchases and debits				42 690,69
	Closing balance				42 452,87
VAT Summary					
	Total charged excluding VAT				3,51
	Total VAT				0,49
	Total charged including VAT				4,00
Transaction details					
Date	**Description**	**Amount**	**Date**	**Description**	**Amount**
25 Jan. 17	Balance brought forward	–37,81			
Credits			**Credits**		
2 Feb. 17	Fund transfer	–200,00	25 Feb. 17	Credit interest	–0,01
Debits			**Debits**		
2 Feb. 17	ATM withdrawal	200,00	10 Feb. 17	Pentravel	31 716,69
2 Feb. 17	ATM withdrawal fee	4,00	10 Feb. 17	Trafalgar	10 770,00
Closing balance					**42 452,87**

[Adapted from www.standardbank.com]

NOTE:

- All purchases have a 55-day interest-free period from the date of purchase up to the date of settling the purchase price in full.

2.3 TABLE 2 below shows the publishing data (some data omitted) in terms of the revenue and the market value of the book titles published in 15 countries during 2013.

TABLE 2: REVENUE AND MARKET VALUE OF BOOK TITLES PUBLISHED IN 15 COUNTRIES DURING 2013

COUNTRY	REVENUE		MARKET VALUE		NUMBER OF BOOK TITLES PUBLISHED
	(m€)	(mLC)	(m€)	(mLC)	
USA	24 210	26 750	28 265	37 829	304 912
China	9 173	77 080	15 342	128 928	444 000
Germany	5 567	5 567	9 536	9 536	93 600
UK	4 551	3 898	3 875	3 240	184 000
Japan			5 409	785 100	77 910
Korea	2 949	4 212 623	4 879	6 969 316	43 146
France	2 687	2 687	4 401	4 401	95 483
Spain	2 060	2 060	2 708	2 708	76 434
Brazil	1 645	5 359	2 239	7 294	…
Italy	1 645	1 645	1 838	1 838	64 117
Turkey	1 183	1 583	1 729	2 314	47 352
Netherlands	1 108	1 108	1 497	1 497	24 177
Norway	311	2 627	743	4 167	6 373
Finland	254	254	338	338	8 870
Belgium	240	240	252	252	4 612

[Source: *IPA, Annual Report,* October 2014]

Brazil published the maximum number of book titles.

NOTE:

- m€ – millions of euros
- mLC – millions of local currency

Use TABLE 2 above to answer the questions that follow.

2.3.1 Give ONE possible reason why there is no recorded revenue data for Japan. (2)

2.3.2 Calculate the number of book titles published for Brazil if the range of the number of book titles published is 463 223 (3)

2.3.3 Calculate the median number of book titles published. (4)

2.3.4 Determine the modal market value in euros (€). (2)

2.3.5 Determine the number of countries where the euro (€) is the local currency. (3)

2.3.6 Calculate, as a percentage, the probability of randomly selecting a country whose market value of the published book titles is more than 1 billion euro. (3)

QUESTION 4: Adapted from NSC 2018 March Paper 2

4.1

Ms Bobby decided to open a business that sells sportswear sets with printed school logos. Her start-up cost to purchase the machinery and supplies for the business was R10 000. She buys the T-shirts at R50,00 each and the shorts at R35,00 each. It costs a further R10,00 per item to print a school logo on each item.

She sells the T-shirt and shorts as one set of sportswear for R125,00

[Adapted from www.bidorbuy.co.za

Use the information above to answer the questions that follow.

4.1.1. The formula to calculate her total cost is as follows:

Total cost = R10 000 + R105 × (number of sportswear sets)

a) Show how the R105 in the formula above was determined. (3)

b) Calculate her total cost for 500 sets of sportswear. (2)

4.1.2. TABLE 3 below shows the relationship between the number of sets of sportswear sold and her total income for the sets.

TABLE 3: NUMBER OF SPORTSWARE SETS SOLD AND THE TOTAL INCOME (in thousand rand)

NUMBER OF SPORTSWARE SETS SOLD	0	200	400	500	**A**	800	1 000
TOTAL INCOME (in thousand rand)	0	25	50	62,5	87,5	**B**	125

Determine the missing values **A** and **B**. (6)

4.1.3 Use TABLE 3 and the equation in QUESTION 4.1.1 above to draw TWO straight-line graphs representing the total cost and total income for up to 1 000 sets of sportswear.

Draw clearly labelled graphs on the grid provided on the ANSWER SHEET. (7)

(a) Write down the number of sportswear sets that must be sold to break even and give the income at the break-even point. (2)

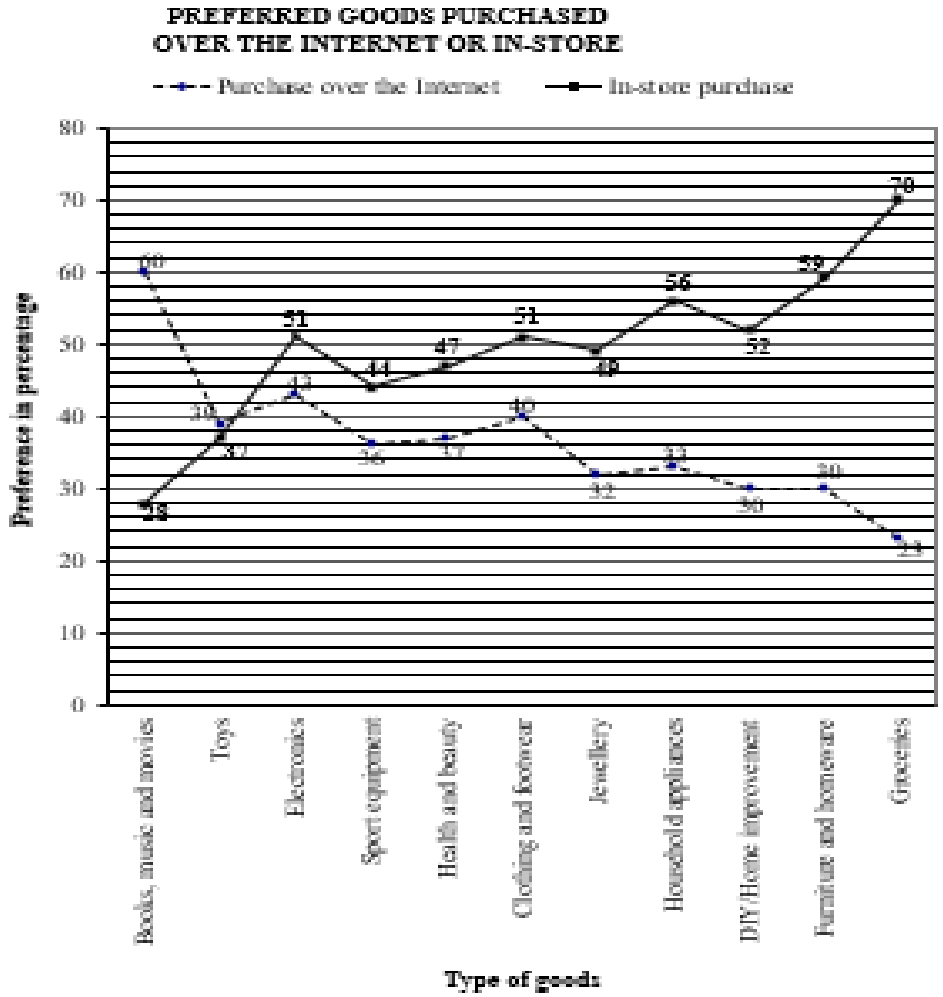
(b) Determine exactly how many sets of sportswear must be sold to make a profit of R6 000 (3)

4.2.

The photograph of a set of sportswear (T-shirt and shorts) must be placed together on an A4 page, as shown below. The actual measurements of the A4 page, T-shirt and shorts are given below.

Determine, showing ALL calculations, which ONE of the two scales (1 : 3 or 1 : 4) should be used so that the set of sportswear fits on the A4 page. (6)

4.3. Ms Bobby is interested in selling her sets of sportswear over the Internet.
The line graphs in below show preferred goods purchased over the Internet and in-store.



4.3.1. Give ONE possible reason why some people prefer to buy goods over the Internet rather than in-store. (2)

4.3.2. Determine, with calculations, which goods have the same percentage difference between Internet and in-store purchases. (3)

4.3.3. Determine, with a reason, which ONE of the goods would rather be purchased in-store than over the Internet. (3)

[37]

QUESTION 2: Adapted from NSC 2017 May/June Paper 2

2.1 Statistics South Africa published the following data on urban food price trends for selected wheat products for the period April 2015 to April 2016.

TABLE 2: WHEAT PRODUCT PRICES FOR APRIL 2015 TO APRIL 2016

WHEAT PRODUCTS	AVERAGE (MEAN) PRICE IN RAND			PERCENTAGE CHANGE	
	Apr. 2015	Jan. 2016	Apr. 2016	Jan. 2016 to Apr. 2016	Apr. 2015 to Apr. 2016
Cake flour 1kg	12,10	12,32	12,22	-0,81	0,99
Cake flour 2,5kg	22,57	23,60	26,48	12,20	17,32
Cake flour 5kg	46,39	49,51	53,38	7,82	15,07
Brown bread 600g	6,34	6,57	6,72	2,28	5,99
Brown bread 700g	10,51	10,88	11,50	**Q**	9,42
Brown bread 800g	13,35	**K**	14,44	6,18	8,16
White bread 600g	7,18	7,50	7,50	0,00	4,46
White bread 700g	11,61	12,03	12,66	5,24	9,04
Macaroni 500g	11,00	11,02	12,13	10,07	10,27
Spaghetti 500g	10,87	11,29	12,57	11,34	15,64
Average percentage change:				**6,00**	**E**

[Adapted data from Stats SA Media Release: Food Price Monitor, May 2016]

Use TABLE 2above to answer the questions that follow.

2.1.1 Determine the missing values:

(a) **K** (3)

(b) **Q** (4)

(c) **E** (3)

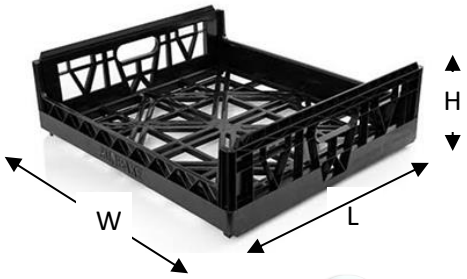
2.1.2 Describe the trend in the average mean prices for white bread (600 g and 700 g) for the period Apr. 2015 to Jan. 2016 and Jan. 2016 to Apr. 2016. (4)

2.1.3 Mr Mkhize buys wheat products regularly. He did not receive a salary increase from January 2015 to January 2016.

Explain the impact of the change in wheat product prices on his household income. (2)

2.2 The average year-on-year inflation rate for 2016 was 6,6% and 6% has been projected for 2017.
Calculate the projected price of brown bread (600 g) in April 2018. (6)

2.3 Meloding Supermarket buys bread for resale directly from the bakery. The bread is stacked in crates when transported.

PICTURE OF A RECTANGULAR BREAD CRATE	PICTURE OF STACKED BREAD CRATES
	
L (length) = 690 mm W (width) = 445 mm H (height) = 180 mm	A maximum of 9 crates may be stacked vertically on top of each other.
[Source: www.alibaba.com and www.rehrigpacific.com]	

The manager had one delivery consisting of 80crates.

Use the information above to answer the questions that follow.

2.3.1 Calculate the volume (in mm^3) of each crate.

The following formula may be used:
Volume of a rectangular prism = length × width × height (3)

2.3.2 The manager stated that all 80 crates can be packed in a 2m × 2m area in the storeroom. (Assume that the height of the storeroom is adequate for 9 stacked crates.)
Verify if this statement is CORRECT. Show ALL calculations (7)

2.3.3 The cost price of the delivery of 80 crates of bread is R5 350,00.
Each crate contains 8 loaves of bread.
The supermarket sells each loaf of bread for R11,50.
The proportional fixed cost for this delivery of bread is R1 720,70.

Calculate the number of loaves of bread that Meloding Supermarket has to sell in order to break even.

The following formula may be used: **Number of loaves to break even =** $\frac{\mathbf{FC}}{\mathbf{SP - CP}}$ [Source:www.slideshare.net] **Where:** **FC** is the proportional fixed costs **SP** is the selling price per loaf of bread **CP** is the cost price per loaf of bread

(5)

QUESTION 2.3: Adapted from NSC 2017 Nov Paper 2

2.3

TABLE 4 in ANNEXURE C shows the ranking for a sample of 11 countries according to: • Mean fuel price per gallon in Russian rouble • Affordability of a gallon of fuel as a percentage of the mean daily wage in each country • Percentage mean income spent on fuel

Use ANNEXURE C to answer the questions that follow.

2.3.1 Identify the country that is the median of the percentage mean income spent on fuel. (2)

2.3.2 Determine the interquartile range of the mean income spent on fuel. (4)

2.3.3 Give ONE valid reason why the sample is considered unbiased with respect to the percentage mean income spent on fuel. (2)

2.3.4 Determine the difference (in Russian rouble) between the mean daily wage in India and South Africa. (6)

2.3.5 A learner's solution for calculating the range (in rand per gallon) of the mean fuel prices is shown below.

LEARNER'S SOLUTION
Range = 425,52 – 21,44 = 404,08 Russian rouble
404,08 Russian rouble = 404,08 ÷ 0,016 = 25 255 euro
25 255 euro = 25 255 × 0,07 = R1 767,85

Verify, showing ALL calculations, whether the learner's solution is correct. (6)

ANNEXURE C

QUESTION 2.3

TABLE 4: COMPARISON OF THE MEAN FUEL PRICES PER COUNTRY BY PRICE, AFFORDABILITY AND PERCENTAGE OF MEAN INCOME SPENT ON FUEL

COUNTRY	MEAN FUEL PRICE		AFFORDABILITY		MEAN INCOME SPENT ON FUEL	
	RUSSIAN ROUBLE PER GALLON	RANKING	GALLON COST AS A PERCENTAGE OF MEAN DAILY WAGE	RANKING	PERCENTAGE	RANKING
Venezuela	21,44	1	0,07	1	0,02	1
China	237,93	22	19,44	50	0,52	3
Norway	425,52	61	3,63	10	0,63	7
Nigeria	92,33	5	22,57	51	0,91	14
Italy	395,98	59	8,57	29	1,12	20
India	236,51	20	93,76	61	1,23	25
Chile	260,87	24	12,52	38	2,03	46
Russia	135,67	8	9,01	30	2,17	47
Canada	226,30	18	3,32	9	2,97	58
Mexico	193,45	14	13,92	44	3,62	60
South Africa	237,35	21	26,20	55	4,11	61

[Adapted from bloomberg.com/graphic, 20 Feb. 2017]

EXCHANGE RATES:

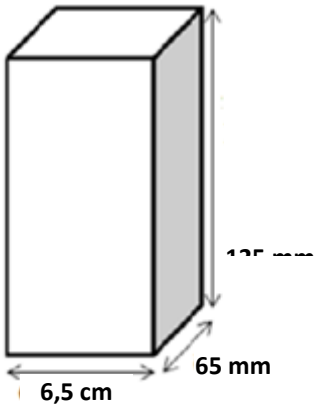
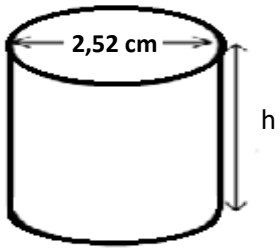
1 Russian rouble = 0,016 euro

1 South African rand = 0,070 euro

[Source: Currency converter, 4 February 2017]

QUESTION 2: Adapted from NSC May/June 2019 Paper 2

2.1 During winter many children develop coughs. Cough syrups are sold in bottles packed in rectangular prism-shaped boxes.
Children are given cough syrup using a cylindrical measuring cup.
The diagrams below show the bottle, the box and the measuring cup.

PICTURE OF A COUGH SYRUP BOX AND A BOTTLE OF SYRUP	DIMENSIONS OF A RECTANGULAR COUGH SYRUP BOX	SKETCH OF A CYLINDRICAL MEASURING CUP
		

Total surface area of a rectangular prism:
= 2(length × width) + 2(length × height) + 2(width ×height)

Volume of a rectangular prism = length × width × height

Total surface area of cylinder = $(2\pi \times \text{radius}^2) + (2\pi \times \text{radius} \times \text{height})$

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

Use: $\pi = 3{,}142$
$1 m\ell = 1\ cm^3$

Use the information above to answer the questions that follow.

2.1.1 Consider the cough syrup box.

(a) Calculate (in cm^3) the total surface area of the cough syrup box. (4)

(b) Give a practical reason why a cartoon picture would feature on the box of the cough syrup for children. (2)

2.1.2 Calculate (in cm) the height of the medicine measuring cup if the diameter is 2,52 cm and the volume is 10 mℓ. (4)

2.2 The pharmacy received the following order of cough syrup:

- 5 large cartons of cough syrup
- Each carton is packed with 4 layers of cough syrup boxes
- Each layer has 8 rows of cough syrup boxes
- Each row has 6 boxes of cough syrup

Calculate the total number of cough syrup boxes the pharmacist received. (4)

2.3 Whooping cough affects the chest and nose and is characterised by a cough that makes a 'whoop' sound.

TABLE 3 below shows data about the reported cases of whooping cough and the percentage of hospitalisation per age group. Some data has been omitted and some reported cases did not indicate the patients' ages.

TABLE 3: Reported whooping cough cases and percentage hospitalised by age group.

[Adapted from scielo.org.za

AGE GROUP	NUMBER OF CASES PER AGE GROUP	AGE INCIDENCE PER 100 000	HOSPITALISED PER AGE GROUP (%)
Less than 6 months	1 280	64,5	44,2
6–11 months	612	30,8	11,5
1–6 years	3 051	12,7	2,8
7–10 years	2 221	13,5	1
11–19 years	**N**	13,7	0,9
20+ years	3 429	1,4	7,6
Unknown age	76	N/A	N/A
TOTAL	_____	4,9	6,6

Use the information above to answer the questions that follow.

2.3.1 **N** represents the highest number of whooping cough cases for the known age groups. The range for the number of whooping cough cases for the known age groups is 4 527.

Determine the value of **N**. (4)

2.3.2 Determine the interquartile range (only known age groups) for the reported number of whooping cough cases per age group. (5)

2.3.3 It was stated that the unknown age group makes up 0,5% of the total number of reported cases for whooping cough.

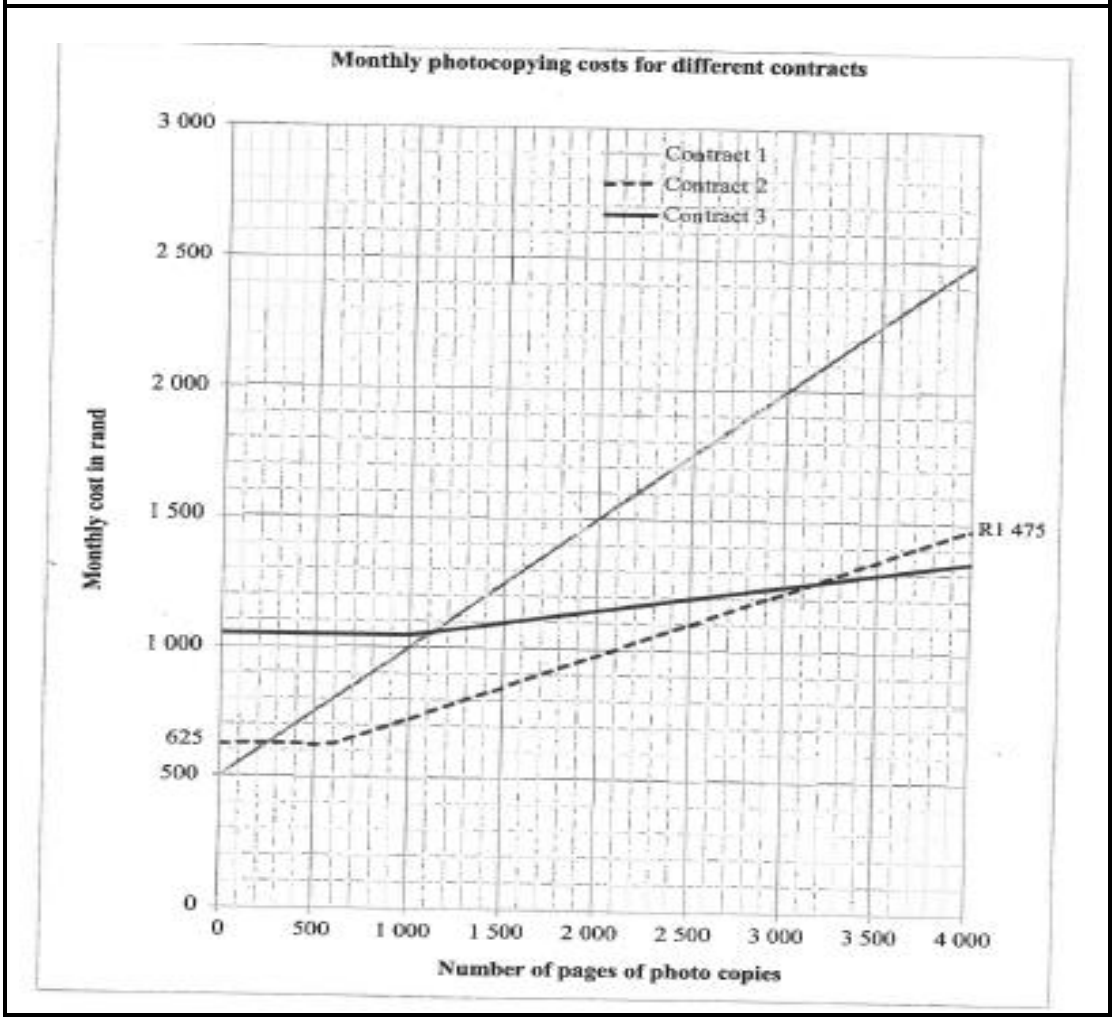
Explain, by means of calculations, why this statement is CORRECT. (5)

2.3.4 Calculate the difference between the number of cases that were hospitalised in the age group less than 6 months and the age group 20+ years. (4)

[32]

QUESTION 3: Adapted from NSC May/June 2019 Paper 2

3.1 Pro-Print hires out photocopying machines and offers three contract options. The three contract options are shown in the graph on the ANSWER SHEET.



Use the information in the ANSWER SHEET to answer the questions that follow.

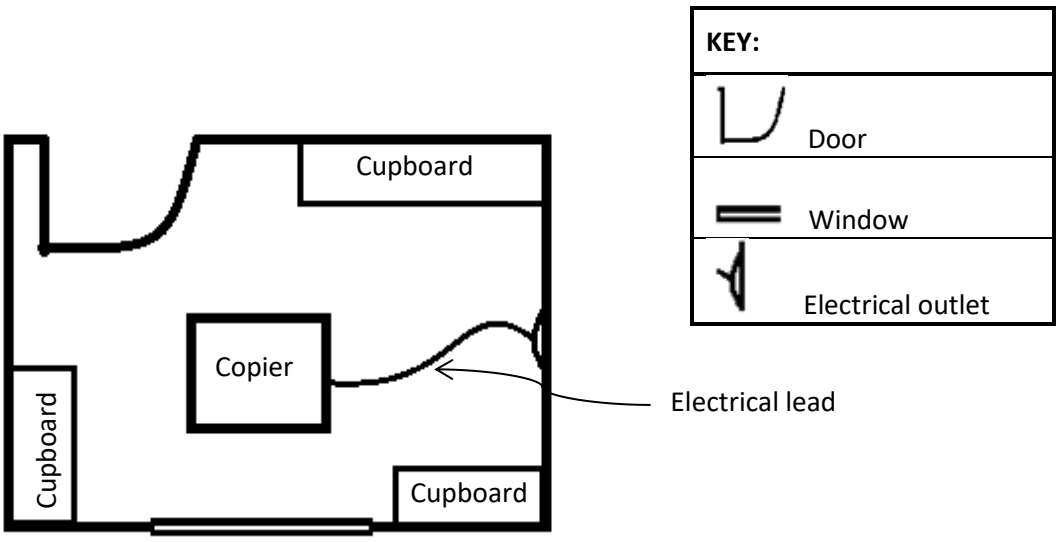
3.1.1 Write down the number of pages at the point where Contract 2 and Contract 3 cost the same. (2)

3.1.2 Academy School makes 1 500 copies per month.
Determine which contract will be the cheapest option. (2)

3.1.3 Use the graph on the ANSWER SHEET to determine a formula for calculating the total cost (in rand) for contract 2. (5)

3.1.4 Copy King charges a rate of R0,70 per copy for hiring their copying machine with no other costs.
Draw on the same grid on the ANSWER SHEET another line graph to show the costs charged by Copy King. (3)

3.2 The layout plan of the copy room at Academy School is given below.



Justify, with a reason, whether or not the copier is suitably placed in the room. (3)

3.3 Scaled models of vehicles are available for collectors.
A model of a Mercedes Benz truck was constructed using a scale of 1 : 50

Picture and information of a model of a Mercedes Benz truck

Price: A$45 (cost price, excluding import taxes)
Model of a Mercedes Benz 14313 vintage truck
Scale 1 : 50

Use the information above to answer the questions that follow.

3.3.1 The length of the truck in the picture is 76 mm. However, the copy of the picture was reduced by 58,5%.
Calculate (in metres) the actual length of the truck. **(5)**

3.3.2 Layla stated that the total cost of the 300 model trucks she intends to import is R159 778,70, including import taxes.

Verify, showing ALL calculations, whether her statement is CORRECT.
Use the following information:

1A$ = R9,41564, where A$ represents Australian dollar.

(6)

Import taxes = VAT (15%) on the cost price in rand + import duties (4,7%) on the cost price in rand

[26]

QUESTION 5: Adapted from NSC 2019 May Paper 2

5.1 When a person buys an asset he can insure this asset against loss or damage. If this asset is lost or damaged the person may claim from the insurance company. In some cases, the insurance company may not pay out the claim. In this case the person can contact the ombudsman (a legally appointed person) who will act on behalf of the person to assess if the claim is valid.

ANNEXURE B shows information regarding the value of insurance claims in favour of persons who had valid claims (with the ombudsman) during 2015 to 2017.
Use the information in ANNEXURE B to answer the questions that follow.

5.1.1 Calculate the difference in the total value of valid cases from 2016 to 2017. (3)

5.1.2 Determine the percentage difference in the rand value for the complaints resolved in favour of the homeowner claims from 2015 to 2017. (5)

5.1.3 Determine the percentage difference in the rand value for the complaints resolved in favour of the homeowner claims from 2015 to 2017. (4)

5.1.4 Sannie stated that the pie chart for 2015 did not reflect the correct values, since the household and other claims showed the same percentage while the rand values in the tables differed.

(a) Verify, showing ALL calculations, whether her statement is valid. (5)
(b) Give ONE reason why the percentages would be shown as the same. (2)

5.1.5 Determine the average amount that was paid out to each insured home owner in 2017 if 14,0858% of the 2 144 claims received were successful. (4)

5.1.6 Describe the trend in the percentage resolved commercial claims from 2015 to 2017. (2)

5.2 The average time it took for a claim, to be processed from registration to final decision was 131 days in 2017.

Mr. Hesse stated that his claim which was registered on 10 July 2017 with a final decision reached on 3 November 2017, exceeded the average number of days.

Verify, showing ALL calculations, whether his statement is valid (3)

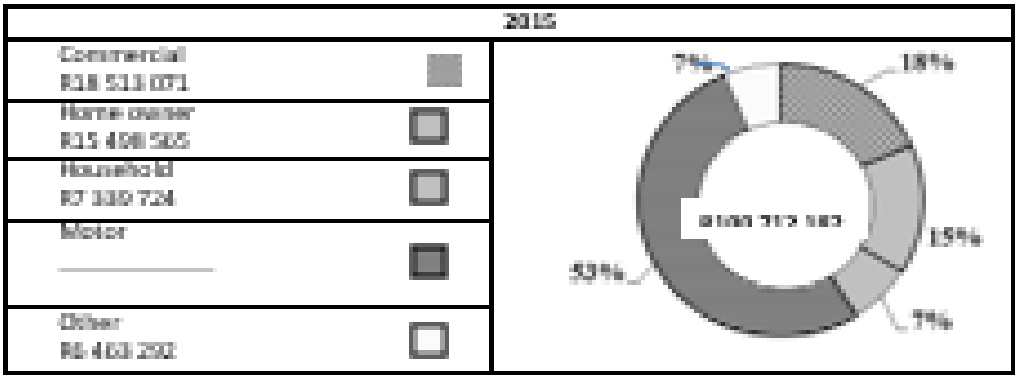
5.3. Give ONE reason why insurance companies sometimes refuse to pay out a claim even though the item may be insured. (2)

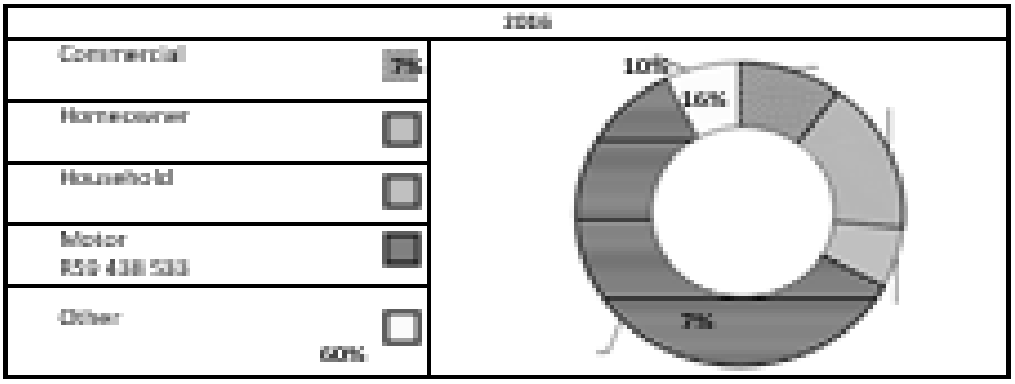
[30]

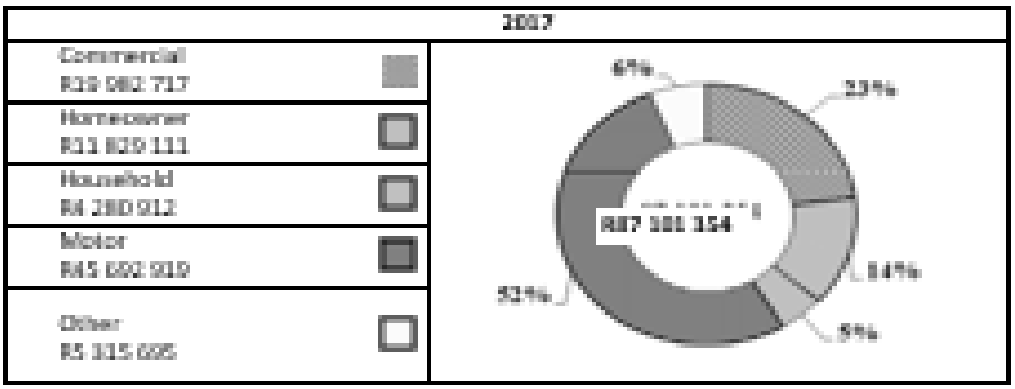
ANNEXURE B

QUESTION 5.1

RAND VALUE OF COMPLAINTS RESOLVED IN FAVOUR OF THE INSURED PER CLAIM TYPE







[Adapted from CGTV Annual Report, 2017]

SECTION 7

PART TWO OF EXAM TYPE QUESTIONS: Possible Question s in Paper 2

QUESTION 1: Adapted from NSC 2018 March NSC Paper 2

The Rand Show is an annual event held in Gauteng. The Abrahams family, consisting of two adults aged 45 and 48, two children aged 6 and 14 and a grandmother aged 73, planned to visit the Rand Show.

TABLE 1 below shows the duration and ticket prices of the 2017 Rand Show.

TABLE 1: DURATION AND TICKET PRICES OF THE 2017 RAND SHOW

DURATION	TICKET PRICING	
	VISITORS AGE CATEGORY	PRICES INCLUSIVE OF 14% VAT
Friday 14 April to Sunday 23 April 09:00–19:00 daily	Adults (aged 17 to 64)	R150
	Pensioners (65 years and older)	R50
	Teens (aged 13 to 16)	R50
	Children (aged 6 to 12)	R20
	Children (under 6)	Free
18 April to 20 April	Adults and pensioners receive a 50% discount	

[Adapted from www.therandshow2017.co.za]

Use the information above to answer the questions that follow.

1.1.1 Calculate the total number of hours the Rand Show will be open to visitors for the full duration of the show. (3)

1.1.2 Calculate the amount of VAT payable on a teen's ticket. (3)

1.1.3 Determine the probability (in simplified form) of randomly selecting a Friday visit to the Rand Show. (3)

1.1.4 The family visited the Rand Show on 23 April 2017.

Mrs Abrahams stated that if the family had visited the Rand Show on 20 April instead of 23 April, they would have saved more than 35% on the total cost of the tickets.

Verify, showing ALL calculations, whether her statement is valid. (9)

QUESTION 1: Adapted from NSC 2017 May Paper 2

1.1 Basketball is a team sport in which any member of the team can score points in a match. In TABLE 1 below the manager of a basketball team recorded the number of points scored by each member of the team in the last two tournaments played.

TABLE 1: RECORD OF POINTS SCORED BY EACH TEAM MEMBER

Player	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
First Tournament	27	41	53	32	42	28	43	34	46	62	56	30	38	44	43

Player	E	B	C	D	A	F	G	H	I	M	K	L	J	O	N
Second Tournament	10	10	17	20	27	29	33	40	41	50	63	70	79	81	100

[Source: watch.nba.com]

Use TABLE 1above to answer the questions that follow.

1.1.1 Express the probability (as a decimal) of randomly selecting a member of the team who scored between 50 and 80 points in the second tournament. (3)

1.1.2 Calculate, as a percentage of the total number of team players, the number of players whose points decreased from the first to the second tournament. (3)

1.1.3 Use the points scored by the team in the first tournament and determine:

(a) Median score (3)

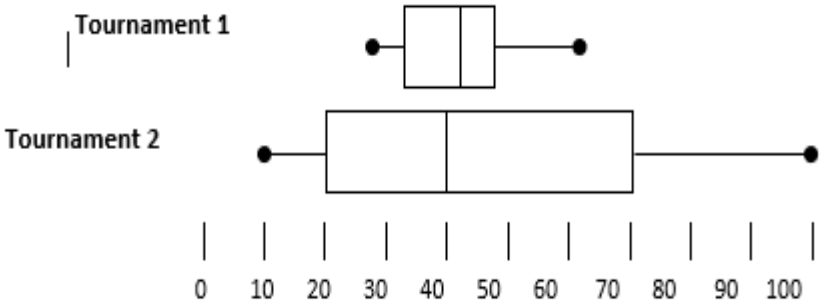
(b) Modal score (2)

(c) Interquartile range (IQR)

The following formula may be used:

IQR = upper quartile – lower quartile (3)

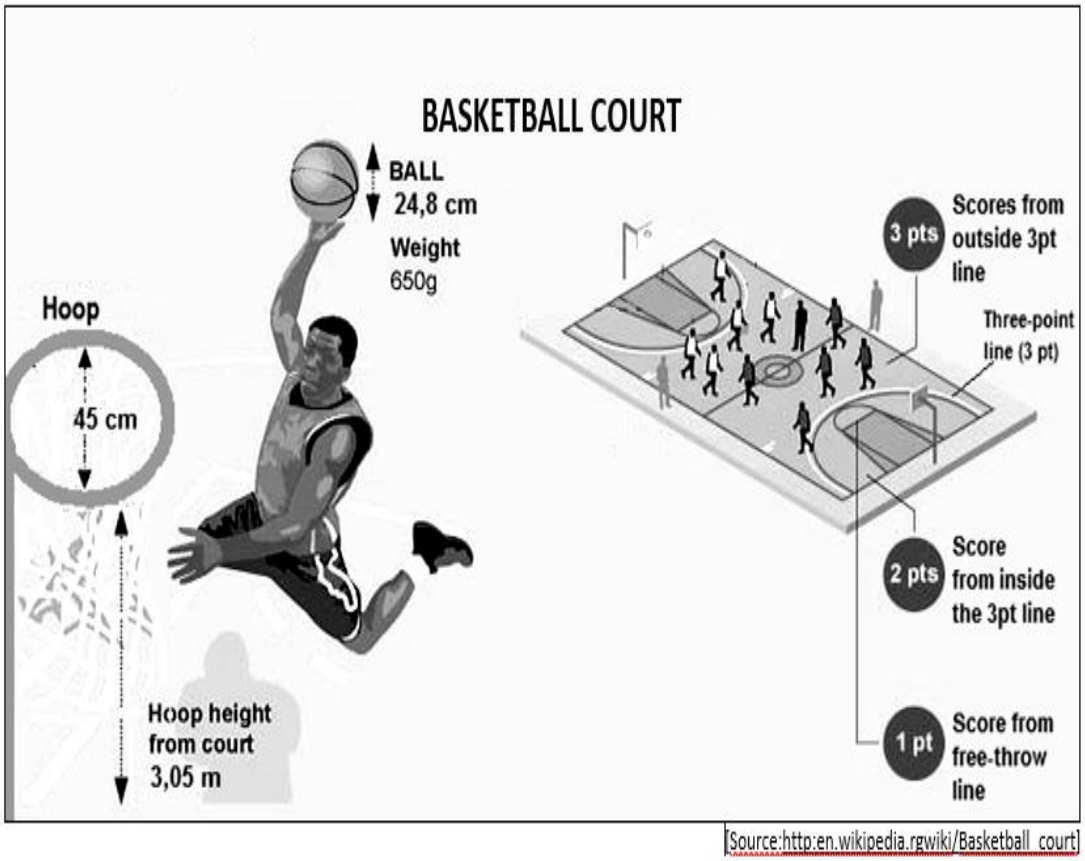
1.1.4 The box and whisker plots below represent the points scored by individual players in the two tournaments



Use the interquartile range and the maximum and minimum values to compare the performance of the team during the two tournaments.

(4)

1.2 PICTURE 1 in ANNEXURE A below shows a basketball court, scoring positions with points and a player scoring.



Use ANNEXURE A and the information provided in QUESTION 1.1 to answer the questions that follow

1.2.1 A player in the first tournament scored his total points with goals as follows:

- 3 goals from free-throw line
- 8 goals from inside the 3-point(pt) line
- 3 goals from outside the 3-pt line

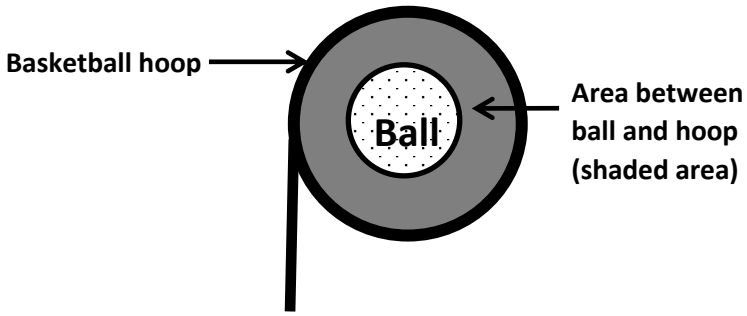
Determine which player obtained this total score. Show ALL the calculations. **(4)**

1.2.2 The diameter of the centre circle of a normal basketball court is 3,66 m. **(3)**
Write (in simplified form) the ratio of the diameters of:
hoop**:** centre circle

1.2.3

The shaded part in the diagram below shows the ball passing exactly through the centre of the hoop

DIAGRAM 1: DIRECT VIEW OF THE AREA BETWEEN THE BASKETBALL AND THE HOOP WHEN IT PASSES THROUGH THE CENTRE



Determine the area of the shaded part of the sketch.
You may use the following formula:

Area of circle = $\pi \times (\text{radius})^2$, were π = 3,142

(7)

The team that won the tournament received a total bonus of R8,1 million.

The 15 players in the team were placed into three groups, X, Y and Z, according to their performance in the tournament. Each group has an equal number of players.

The bonus was shared between the three groups in the ratio X:Y: Z = 2:3:4. Each player in each group received an equal amount of money.

A player in group Y stated that he would receive a bonus of R540 000.

Verify whether his statement is CORRECT. Show ALL the calculations. **(7)**

Question 4

4.1

Abel lives in Australia. He earned an annual taxable income of $289 303,26in the 2015/2016 tax year and $311 001 in the 2016/2017 tax year. He studied the revised Australian tax tables which showed that from 1 July 2016 individual tax rates for certain brackets had changed.

The Australian tax tables for the 2015/2016 and 2016/2017 tax years are given on ANNEXURE C. Below:

TABLE 6: INDIVIDUAL INCOME TAX RATES 2015/2016

Taxable Income (tax brackets)	Tax on Income
$0 – $1 200	Nil
$18 201 – $37 000	19c for each $1 over $18 200
$37 001 – $80 000	$3 572 plus 32,5c for each $1 over $37 000
$80 001 – $180 000	$17 547 plus 37c for each $1 over $80 000
$180 001 and over	$54 547 plus 45c for each $1 over $180 000

TABLE 7: INDIVIDUAL INCOME TAX RATES 2016/2017

Taxable Income (tax brackets)	Tax on Income
$0 – $18 200	Nil
$18 201 – $37 000	19c for each $1 over $18 200
$37 001 – $87 000	$3 572 plus 32,5c for each $1 over $37 000
$87 001 – $180 000	$19 822 plus 37c for each $1 over $87 000
$180 001 and over	$54 232 plus 45c for each $1 over $180 000

- **NOTE:** Residents of Australia also pay a medical levy of 2% of their taxable income.
- **NOTE:** The rates above do not include the additional 2% of taxable income forthe medical levy.

Use the information above and ANNEXUREC to answer the questions that follow.

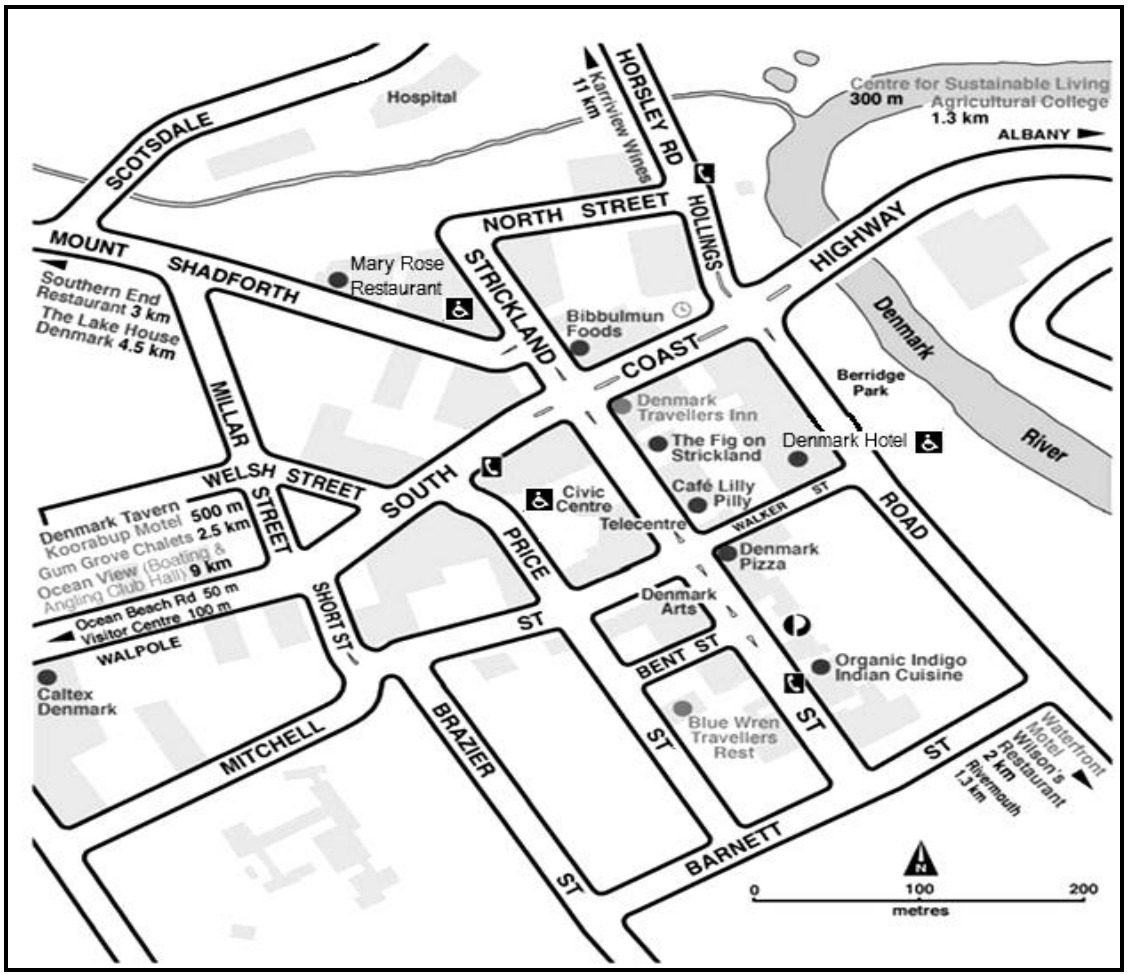
4.1.1 Identify the taxable income bracket(s) affected by the tax rate changes introduced from 1 July 2016. (3)

4.1.2 Explain the tax implications of the medical levy on individual tax-payers. (2)

4.1.3 Abel stated that the tax and medical levy due for the 2016/2017 tax year was$9 882,94 more than the amount that was due for the 2015/2016 tax year. Verify, showing ALL calculations, whether his statement is CORRECT. (12)

4.2

Abel went on holiday and stayed in the Denmark Hotel. He used a map to help him identify the different tourist destinations.
The map is shown in ANNEXURE D below



4.2.1 Write down the names of the venues that have wheelchair access. (3)

4.2.2 Give ONE valid reason why it can be stated that a bridge forms part of the South Coast Highway. (2)

4.2.3 State the general direction of the Civic Centre from Organic Indigo Indian Cuisine. (2)

4.2.4 Describe the route that Abel would travel if he exited the Denmark Hotel at the Walker Street entrance and intended visiting the Mary Rose restaurant. (3)

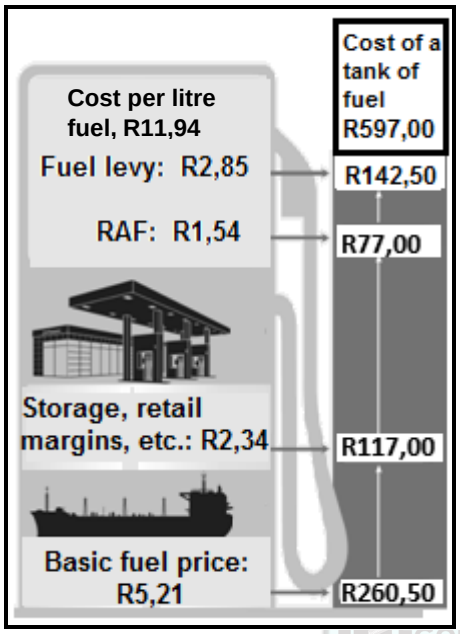
4.2.5 Abel walks at a speed of 1,1 m per second.
He commented that it would take him 2 minutes to walk from Denmark Pizza to Organic Indigo Indian Cuisine.
Verify, showing ALL calculations, whether this comment is valid. (9)
[36]

QUESTION 2: Adapted from NSC 2017 Nov NSC Paper 2

2.1 The cost of fuel in South Africa is made up of the basic fuel price and other costs, as shown in the infographics below.

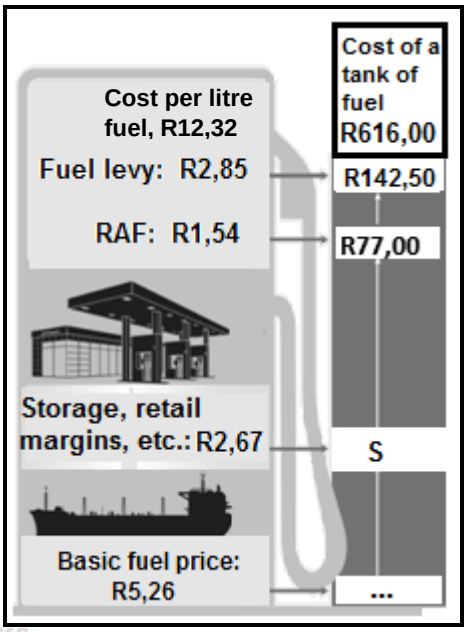
COASTAL

FUEL PRICE



INLAND

FUEL PRICE



Other costs include:

- Transport
- Customs and excise duties
- Retail margins paid to fuel station owners
- Secondary storage
- Fuel levy
- Road Accident Fund (RAF) levy

[Adapted from SARS, RAF, SA Petroleum Industry Association, National Treasury]

Use the information above to answer the questions that follow.

2.1.1 Explain why the inland and coastal fuel prices are not the same. (2)

2.1.2 Calculate the missing value **S**. (3)

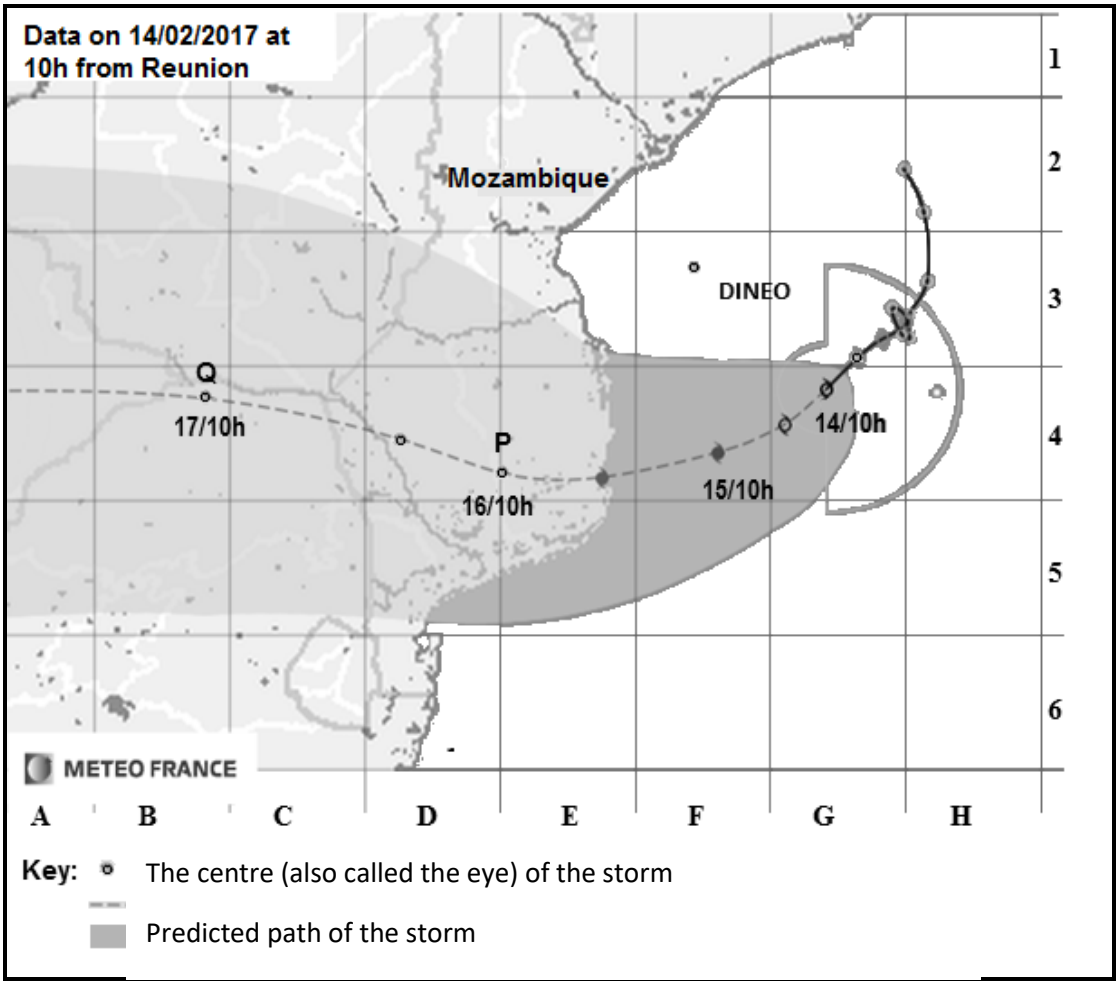
2.1.3 Jabu's vehicle has an average fuel consumption of 7,3 litres per 100 km.

Jabu stated that it cost her R50 more for fuel to travel 1 250 km in an inland region than it cost to travel the same distance in the coastal region.

Verify, showing ALL calculations, whether Jabu's statement is valid. (5)

QUESTION 4: Adapted from NSC 2017 Nov NSC Paper 2

4.1 During February 2017 tropical storm Dineo caused damage to property in Mozambique, but it also brought much needed rain. Below is a chart issued by Meteo France (the French weather office) showing the projected path of the storm as well as likely affected land areas.



NOTE: 15/10h indicates the predicted position at 10:00 on 15 February.

[Adapted from Meteo France]

4.1.1 Dineo was classified as a Category 1 tropical storm with a maximum average wind speed of 95 miles per hour.

NOTE: 50 miles = 80,4672 km

Convert (rounded off to TWO decimal places) the maximum average wind speed to kilometres per hour. (3)

4.1.2 The distance between two vertical gridlines on the map is approximately 205,043 km. Calculate, using the measured distance, the predicted average speed (in km/h) of the storm from point **P** to point **Q**.

You may use the following formula:

Distance = average speed × time (8)

4.2

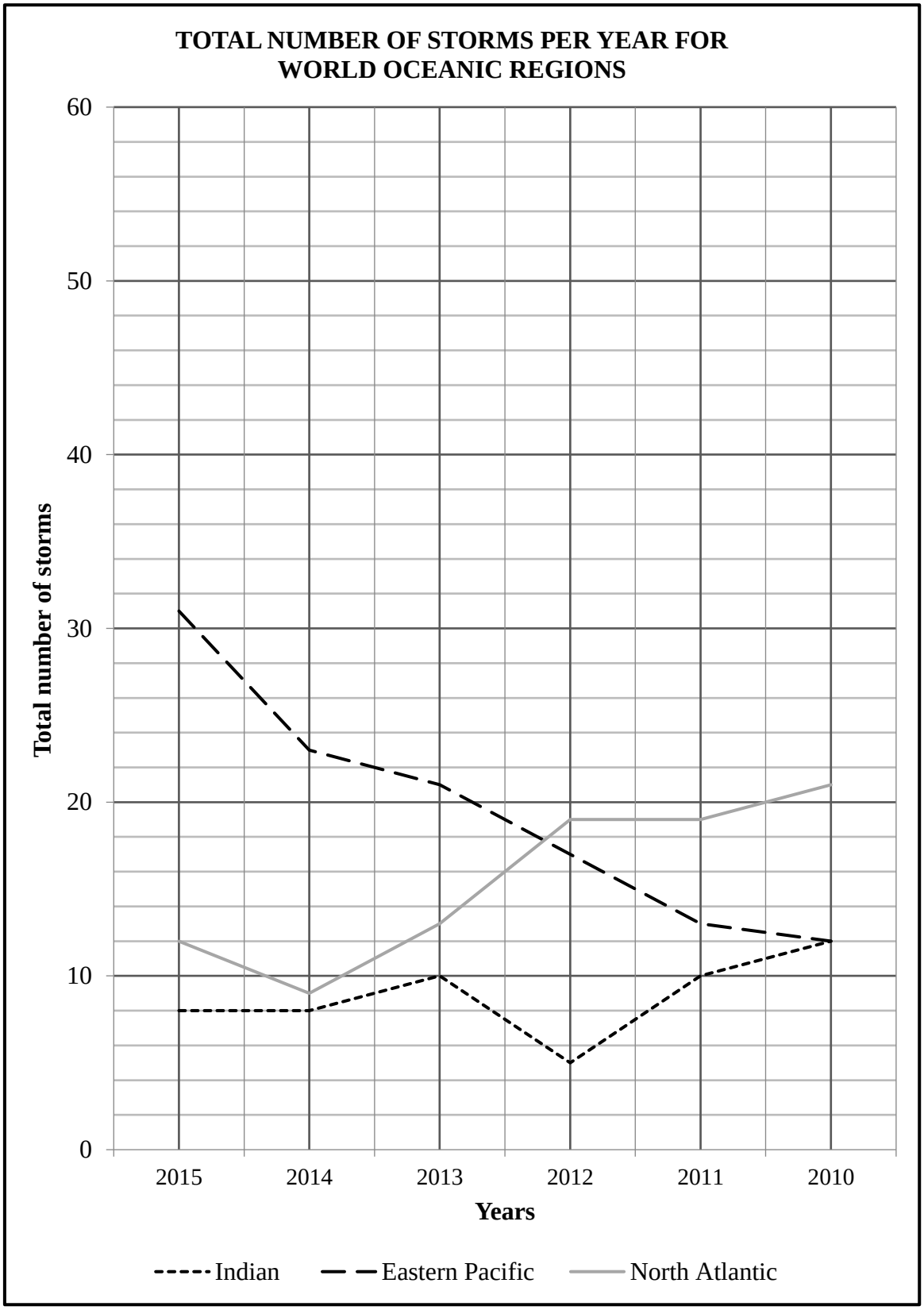
TABLE 6 on ANNEXURE F shows the total number of storms from 2010 to 2015 that affected four world oceanic regions, as well as the cost of damages (in millions of US dollars (USD)) during this period. Some of the data in the table have been omitted.

Broken line graphs representing the number of storms for three regions have been drawn on the ANSWER SHEET.

TABLE 6: TOTAL NUMBER OF STORMS FROM 2010 TO 2015 AFFECTING VARIOUS WORLD OCEANIC REGIONS AND THE TOTAL COST OF DAMAGE

		WORLD OCEANIC REGIONS			
		INDIAN	WESTERN PACIFIC	EASTERN PACIFIC	NORTH ATLANTIC
Total number of storms per year	2015	8	39	31	12
	2014	8	30	23	9
	2013	N	52	21	13
	2012	5	34	17	19
	2011	N	40	13	19
	2010	12	19	12	21
Total cost of damage in millions (US dollar)	2015	258	10 200	562	590
	2014	3 400	8 410	1 401	232
	2013	1 500	22 800	4 201	1 510
	2012	56	6 080	28	75 000
	2011	277	10 600	203	21 000
	2010	No data available			12 356

[Adapted from Meteo France]



Use TABLE 6 and the graph on the ANSWER SHEET above to answer the questions that follow:

4.2.1 Determine the missing value **N**. (2)

4.2.2 Draw another broken line graph on the ANSWER SHEET representing the total number of storms affecting the Western Pacific region from 2010 to 2015. (5)

4.2.3 Name the region that showed a downward trend in the number of storms experienced from 2010 to 2014. (2)

4.2.4 A news reporter compared the total cost of damage caused in the Western Pacific and North Atlantic regions to the total number of storms from 2011 to 2015. He stated that the more storms a region experienced, the greater the amount of the damage caused by them.

Verify (showing ALL calculations and give a reason) whether his statement is valid. (9)

QUESTION 4: Adapted from NSC 2019 May Paper 2

4.1 Welkom is a town in the Free State. ANNEXURE A is a road map showing part of the streets in Welkom. The town is known for having many traffic circles.

Use the information in ANNEXURE A below/next page to answer the questions that follow.

4.1.1 Write down the general direction of the Concor circle from the Shell circle. (2)

4.1.2 A railway line passes through Milner Road, Othello, Arrarat and Koppie Alleen Streets.

Explain how it is shown on the map that the road is situated above the railway line. (2)

4.1.3 Name the traffic circle that connects FIVE roads. (2)

4.1.4 Describe the route that will be taken by a car entering the town on Stateway from the industrial area if it will be heading to the point in Dagbreek, marked **X**, passing by the city council building on the left. (5)

4.1.5 The actual distance from exiting the Alfa circle to entering the Engen circle is 500 m. The actual distance from exiting circle 13 to entering circle 14 in Stateway is 1,4 km.

Determine, by measurement, whether the map is drawn to scale. (5)

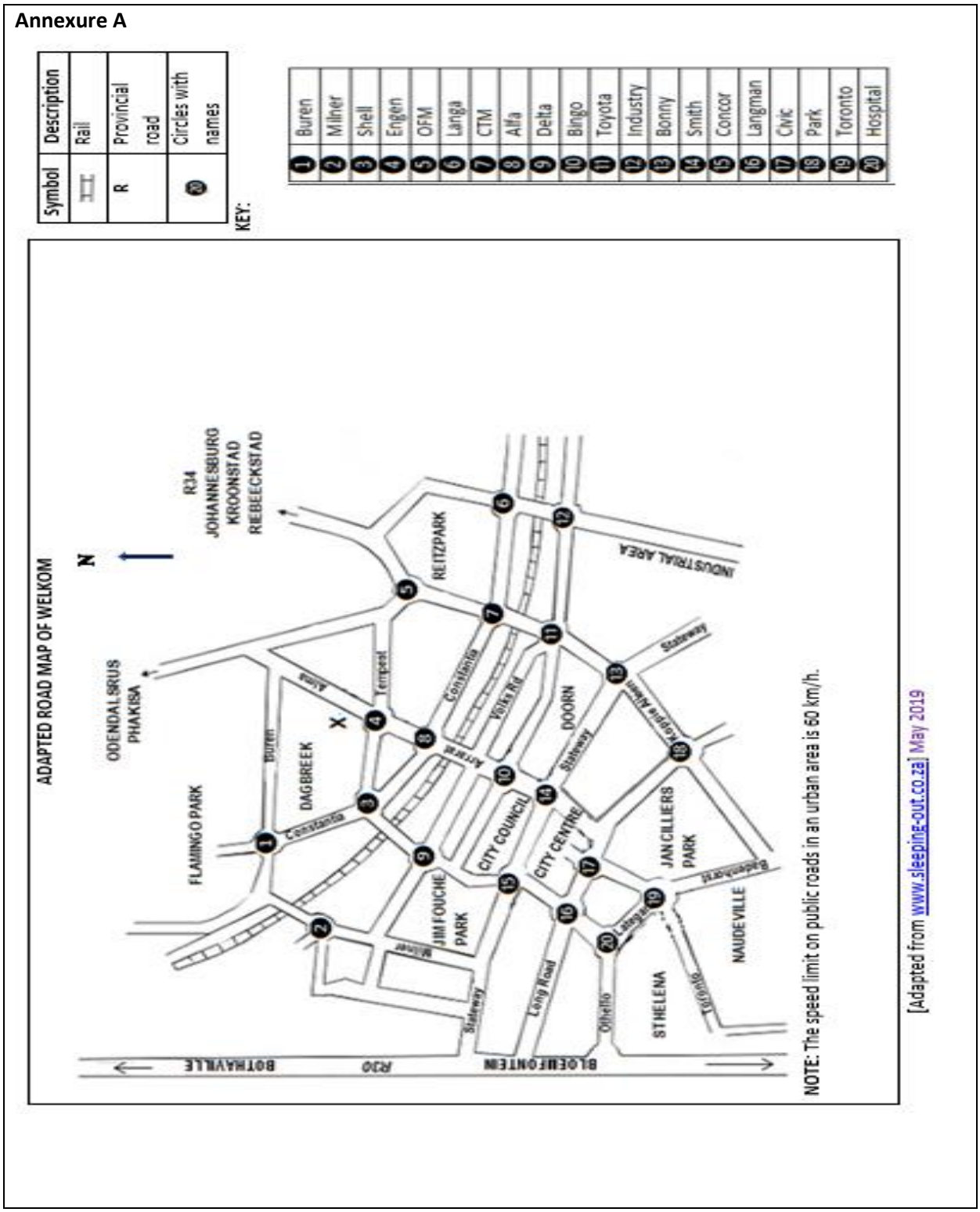
4.1.6 Samuel stated that it took him 5 minutes to cover a distance of 4 km in Welkom.

Verify, with calculation, whether the car was travelling within the speed limit. You may use the formula:
Distance = Speed × Time (4)

4.1.7 The same painters must repaint all the road markings at all the traffic circles in Welkom. Lethu says the probability that the painters are at a circle in Stateway is 0,15.

Verify whether her statement is valid. (4)

Annexure A



SECTION 8

PART THREE OF EXAM TYPE QUESTIONS: Possible Question s in Paper

QUESTION 1: Adapted from NSC 2018 March NSC Paper 2

3.1

An organiser of a science fair has to produce rectangular display boards. The external dimensions of each board are 48 inches by 36 inches. The front surfaces of the boards must be spray-painted with one layer of non-reflective white paint.

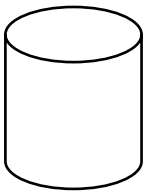
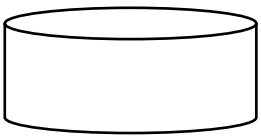
NOTE:
1 mℓ of the paint covers a surface area of 50 cm^2
1 inch = 25 mm

Determine, showing ALL calculations, whether 5 litres of the paint would be enough to spray paint 25 display boards.

The following formula may be used: **Area = length × width** (10)

3.2

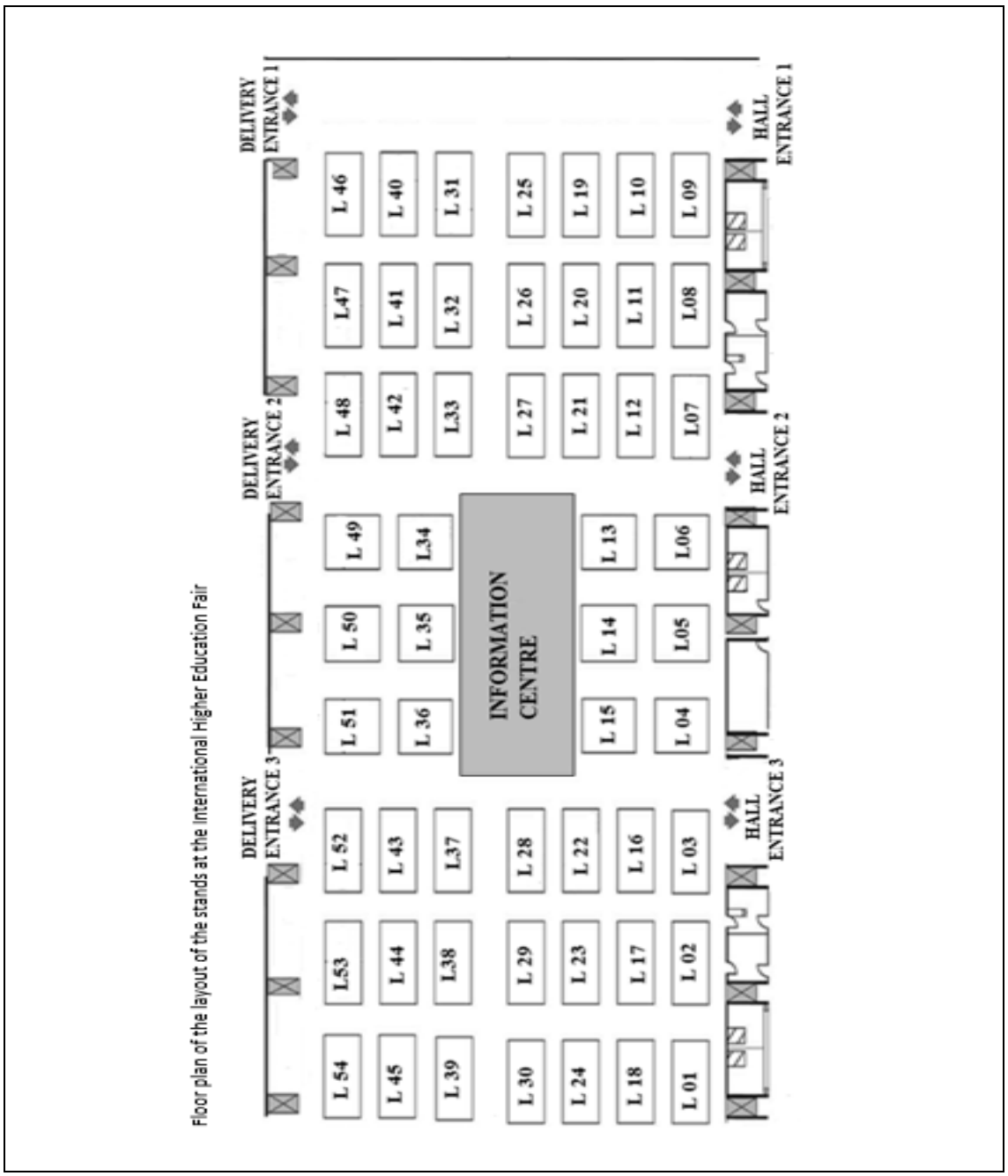
The organiser of the science fair has a choice of two cylindrical containers (as shown below) for display purposes. A decorative label with a 1 cm overlap will be placed right around the container completely covering the curved surface only.

CYLINDER A	**CYLINDER B**
 Diameter = 30 cm Height = 30 cm	 Diameter = 40 cm Height = 20 cm

Verify, showing ALL calculations, whether cylinder **B** would require less material to make the decorative labels.

The following formula may be used:
Curved surface area of cylinder = π × diameter × height, where π = 3,142 (7)

3.3 ANNEXURE C below shows the floor plan of the layout of the exhibition stands allocated to countries for the International Higher Education Fair.



Use ANNEXURE C above to answer the questions that follow.

3.3.1 Give ONE practical reason why the information centre is situated in the middle. (2)

3.3.2 Determine the maximum number of higher education institutions from the USA that can exhibit at this fair. (3)

3.3.3 The organisers of the fair identified the most outstanding exhibition stand.

Determine the probability that this outstanding exhibition stand will NOT be a stand from China. (3)

3.3.4 An electrician was called to attend to a technical issue at one of the exhibitions stands. He followed the route listed below.

- He entered through one of the delivery entrances.
- He proceeded straight ahead passing the information centre on his left-hand side.
- He turned right between the last two rows of stands.
- He then continued straight ahead towards the last stand on his left-hand side to attend to the technical issue.

Identify the delivery entrance used by the electrician and the stand number with the technical issue. (4)

3.3.5 Identify which Chinese stand is closest to the information centre. (2)

3.3.6 Calculate, using measurement, the scale of the floor plan of the layout of the exhibition stands if the actual length of the rectangular information centre is 24,5 m. (5)

QUESTION 3.2: Adapted from NSC 2017 May Paper 2

3.2

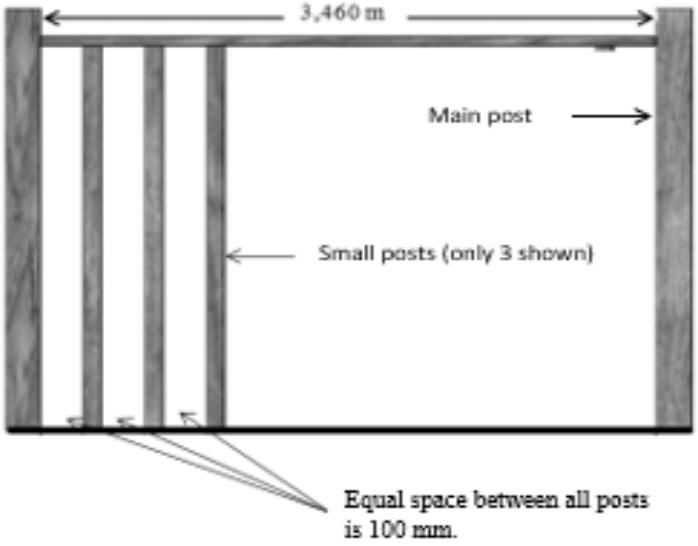
Francis intends renovating her house by changing the following:

- Replacing the carpets in the passage, dining room and living room with laminated flooring
- Building a new railing along one side of the wooden sundeck

The railing consists of panels made up of two main posts and a number of smaller posts. The spaces between the posts are equal.

ANNEXURE B contains the floor plan of Francis' house.

Picture of one incomplete panel that shows the placing of the posts

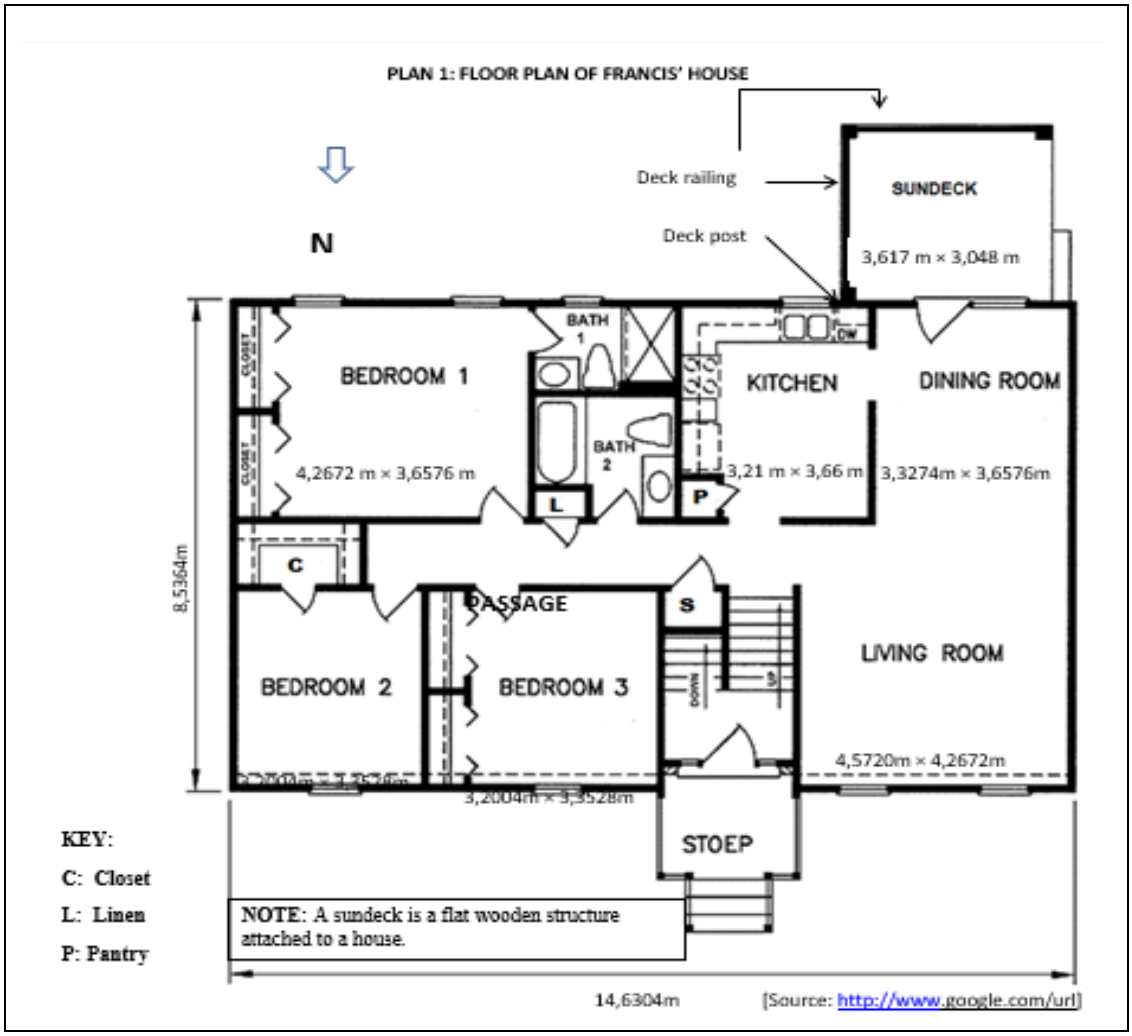


NOTE: A small post has a width of 40 mm. The spaces between the posts in the panel is 100 mm.

Use the information above to answer the question that follows.

3.2.1 Calculate how many posts should be fitted in one panel. (4)

Use ANNEXURE below to answer the questions that follow.



3.2.2 Give and explain ONE possible reason why Bedrooms 2 and 3 will most probably be the warmest rooms during the day. (2)

3.2.3 Explain why the doors of the closet ©, linen (**L**), storage(**S**) and pantry(**P**) all open in a different direction compared to the other doors in the house. (2)

3.2.4 Calculate the total area (rounded to the nearestm^2) that needs to be covered with laminated flooring if the passage is 15% of the combined areas of the dining room and living room.
You may use the formula:
Area of a rectangle = length × width (8)

3.2.5 Francis obtained a quotation for the installation of the laminated flooring in the dining room, living room and passage. An insulation sheet (underlayer)has to be placed on the floor before the laminated flooring is placed on top.

A summary of the labour and materials quotation is as follows:

Labour:

- R1 600 for removal of existing carpets and preparation of floor
- R70,00 per square metre for installation of laminated flooring

Materials:

- R299,90 per box of laminated flooring, where each box covers 2,15 m^2
- R56,90 per roll of underlayer insulation that covers10 m^2

Francis budgeted R12 000 to complete the entire job.

Show, with calculations, whether her budget was sufficient. (8)

QUESTION 2.2: Adapted from NSC 2017 Nov Paper 2

2.2

In his 2017/2018 budget speech the Minister of Finance announced an increase in fuel levies and stated that the projected income from the fuel levies would be R70,9 billion. The income from the fuel levies for 2016/2017 was R54 billion.

2.2.1 Determine the percentage increase in the income received from the fuel levies for 2017/2018. (3)

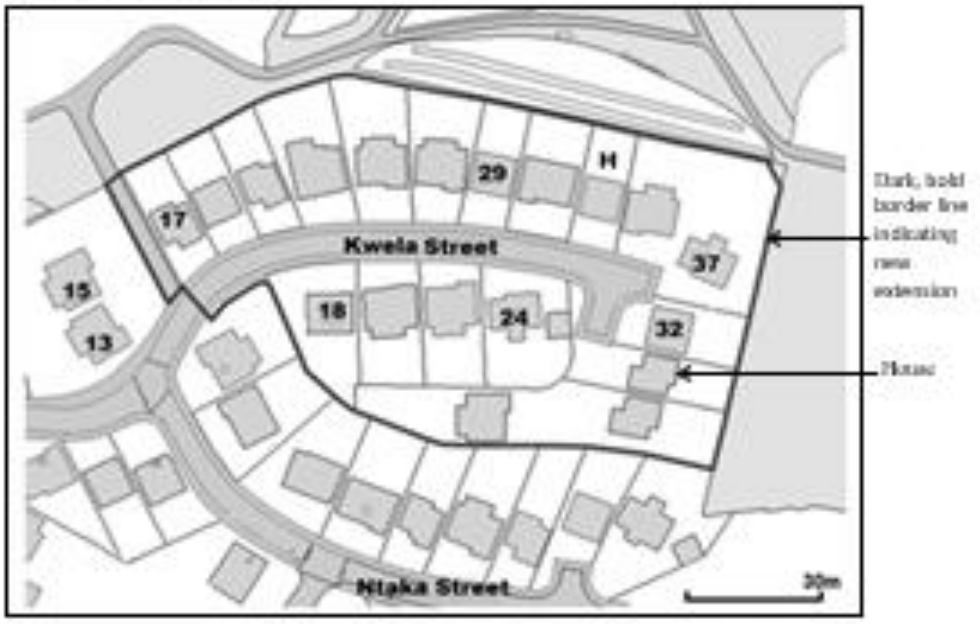
2.2.2 Calculate (to the nearest billion rand) the total national budgeted income for the financial year 2017/2018 if the ratio of the income received from fuel levies to other income received is 7: 118. (4)

QUESTION 3: Adapted from NSC 2018 Nov Paper 2

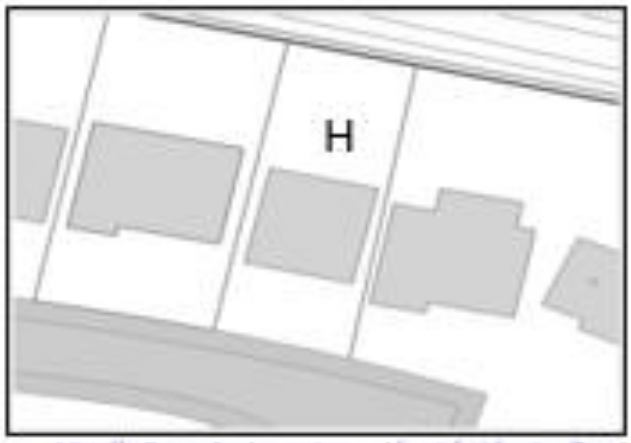
3.1

ANNEXURE D below shows the location of Lizette's property, marked **H** (which includes the house), on the map of Mandela Park. The new extension is indicated using dark, bolder lines, as shown on the map. An enlargement of a section of the main map is also shown.

Map of Mandela Park Extension



Enlargement of a section of the main map



[Source: https://uniformonline.harrogate.gov.uk/arcgis/rest/services/Base Mapping]

Use ANNEXURE D below to answer the questions that follow.

3.1.1 If the numbering system for the properties follows the same pattern, as shown on the main map, determine the street address of the property marked **H**. (3)

3.1.2 Use measurement and the given scale to determine the actual dimensions (in metres) of the rectangular property marked **H**. (6)

3.1.3 Lizette stated that the enlargement is 5 times bigger than the corresponding section on the main map.
Verify, showing ALL calculations, whether her statement is valid. (4)

3.2 ANNEXURE E shows the floor plan of a rectangular room that Lizette wants to add to her property. The room will have a roof and a ceiling with cornices.

Other information:

- Exterior measurements of the room are 5 240 mm × 4 040 mm
- The walls have a uniform thickness of 220 mm
- The ceiling boards only cover the internal area of the ceiling of the room
- Cornices (a decorative edge) will be placed between the walls and the ceiling right around the ceiling of the room, as shown in ANNEXURE E

You may use the following formulae:

Area of a rectangle = length × width
Perimeter of a rectangle = 2 × (length + width)

3.2.1 Calculate (in m^2) the floor area of the room.

3.2.2 The dimensions of each of the ceiling boards she intends using:

900 mm × 2 400 mm

Determine, showing ALL calculations, whether a minimum of seven ceiling boards would be needed for this room

3.2.3 Calculate (in mm) the exact length of cornices needed for this room.

3.2.4

TABLE 5 below shows the price list of materials that can be used.

TABLE 5: PRICE LIST OF MATERIALS (INCLUDING VAT)

CEILING BOARDS	LENGTH (in mm)	PRICE (in R)
4 mm × 900 mm	2 400	91,44
4 mm × 900 mm	3 000	114,31
DECORATIVE MOULDINGS	**LENGTH (in mm)**	**PRICE (in R)**
Cornice	2 000	53,64

[Adapted from Pricelist, Feb. 2016, SA]

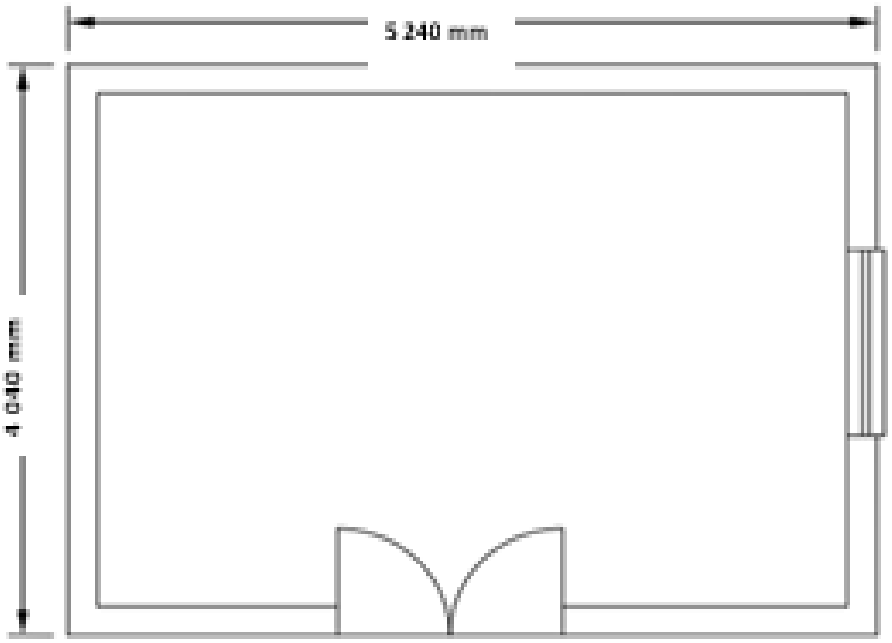
Lizette stated that the total cost of the materials (ceiling boards and cornices) (including VAT) would be less than R1 250.

Verify, showing ALL calculations, whether her statement is CORRECT.

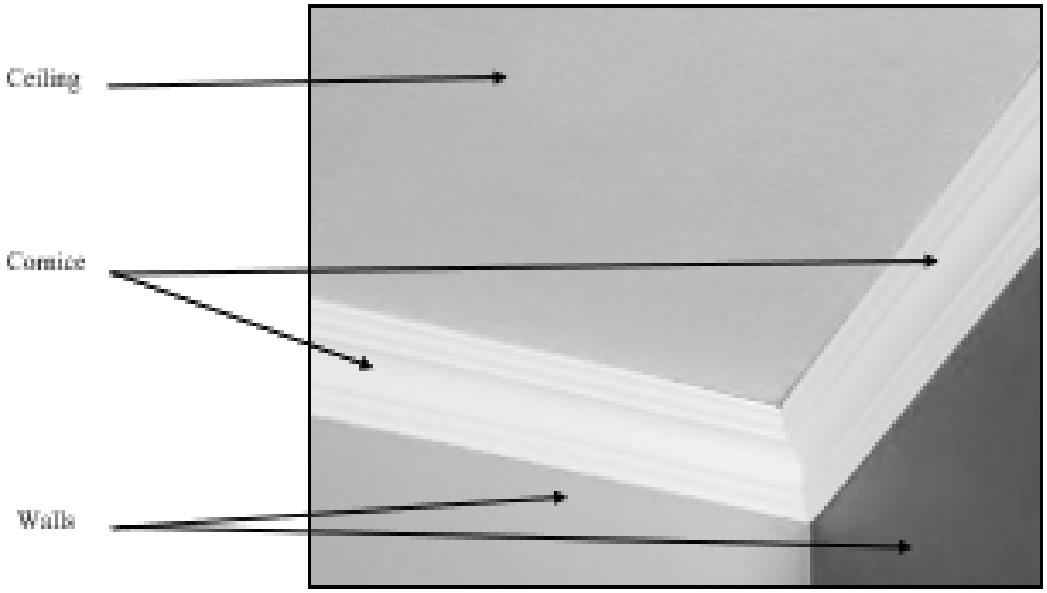
ANNEXURE E

QUESTION 3.2

Floor plan of a rectangular room showing exterior measurements



Part of a room showing the ceiling with the position of the cornice



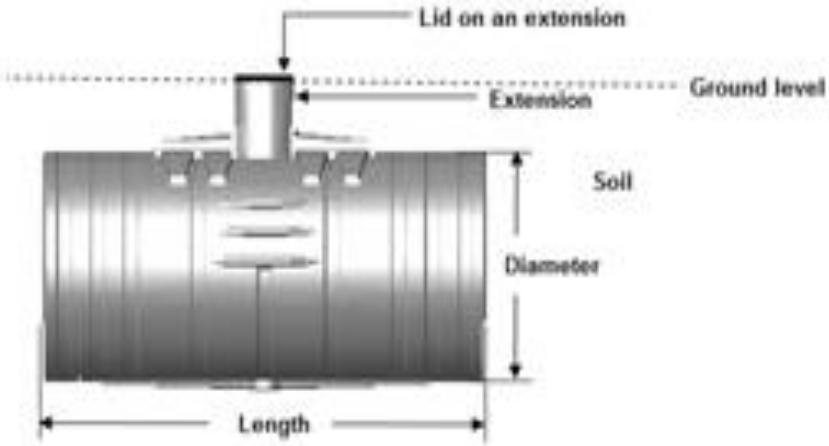
3.2

Lizette also plans to install an underground cylindrical water storage tank on her property, as shown in the diagrams below.

DIFFERENT VIEWS OF A CYLINDRICAL WATER STORAGE TANK

Three-dimensional view

Side view



Dimensions of the tank:

- Capacity: 8 000 ℓ
- Length: 2,9 m

You may use the following formula:

Volume of a cylindrical tank = π × (radius)² × length, using π = 3,142

NOTE: 1 litre = 1 000 cm³

3.3.1 Give ONE possible reason why Lizette would plan to install the water storage tank underground **(2)**

3.3.2 Calculate (in m) the diameter of the water storage tank **(6)**

[40]

QUESTION 4.2: Adapted from NSC 2019 May NSC Paper 2

4.2 The accelerated school's infrastructure delivery initiative (ASIDI) of the Department of Education was created to renovate schools so that they are conducive to learning.

TABLE 4 shows a summary of the completed renovated projects per province.

TABLE 4: Completed ASIDI renovated projects per province

	PROBLEMS AT THE SCHOOL				
PROVINCE	**INAPPRO-PRIATE STRUCTURES**	**WATER**	**SANITATION**	**ELECTRICAL**	**TOTAL NUMBER OF PROJECTS**
Eastern Cape	145	271	171	202	789
Free State	21	53	12	50	136
Gauteng	0	0	14	2	16
KwaZulu-Natal	1	206	103	58	368
Limpopo	3	104	88	5	200
Mpumalanga	5	36	38	45	124
North West	2	3	10	0	15
Northern Cape	1	5	13	2	21
Western Cape	25	3	19	8	55
TOTAL	**203**	**681**	**468**	**372**	**1724**

[Source: ASIDI Delivery Report Update]

Use the information in the table above to answer the questions that follow.

4.2.1 Write down, in simplified form, the ratio of water projects to sanitation projects in Limpopo. (3)

4.2.2 Determine, as a decimal, the probability of randomly selecting a renovation project that successfully completed inappropriate structures. (3)

4.2.3 Determine, to the nearest percentage, the probability of randomly selecting a completed project at a school in KwaZulu Natal that did NOT have electric repairs. (4)

[10]

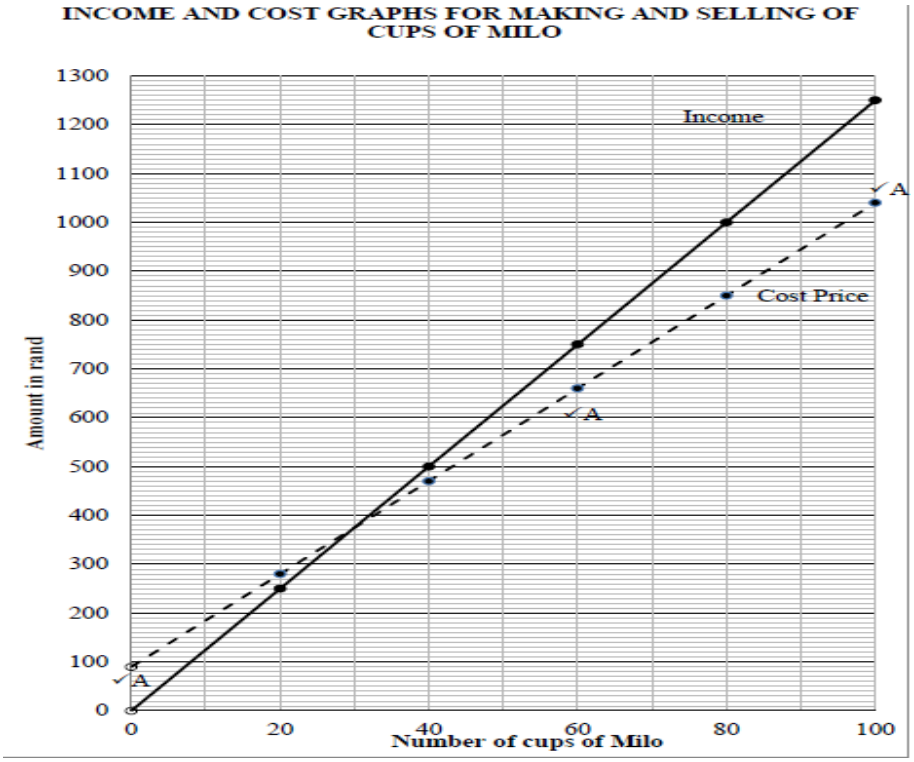
EXAM TYPE QUESTIONS: SOLUTIONS

PAPER ONE

PART ONE OF QUESTION 1		PART TWO OF QUESTION 1	
1.1.1.	Numerical data ✓✓	1.1.1.	Susan Visser / Susan / Visser ✓✓
1.1.2.	Modal allowance = R1 780✓✓	1.1.2.	R548,37 ✓✓
1.1.3.	R1 715; R1 715; R1 695; R1 695; R1 695; R960; R405 ✓✓	1.1.3.	12 / twelve ✓✓
1.1.4.	Increase in rand R1 780 – R1 695 = R85,00 ✓✓	1.1.4.	Debit order is a way for a third party, that you have given permission, to collect money from your bank account. It's typically used to collect monthly subscriptions, insurance premiums or loan repayments ✓✓
1.1.5.	Pension allowances older than 75 War veteran allowances✓✓	1.1.5.	26 days ✓✓
1.2.1.	400 g = 400 × 0,001kg = 0,4 kg ✓✓	1.1.6.	A = R6 859,99 + R144,04 + (– R221,89) =R6 782,14 ✓✓
1.2.2.	Profit/Wins = R14,30 – R10,99 = R3,3✓✓	1.2.1.	26°C ✓✓
1.2.3.	2,5 kg × $\frac{1000}{250}$= 10 packets✓✓	1.2.2.	8 June 2017✓✓
1.2.4.	Selling price = $\frac{29,20}{8}$ =R3,65✓✓	1.2.3.	26°C ; 22°C ; 21°C ; 20°C ; 19°C ; 16°C ; 15°C ; 15°C ; 14°C✓✓
		1.2.4.	6 June 2017✓✓
1.3.1.	a) 69 OR 69% ✓✓ b) 80 OR 80%✓✓	1.2.5.	15°C - 3°C = 12°C✓✓
1.3.2.	Difference 84% – 64% = 20 ✓✓		
1.4.1.	16:00 OR four o'clock in the afternoon ✓✓	1.3.1.	Age group 20 – 29✓✓
1.4.2.	Probability = 20% OR Unlikely OR Less likely ✓✓	1.3.2.	Number of male voters under 40 = 109 224 + 2 443 115 + 3 095 538 = 5 647 877 ✓✓
		1.3.3.	Two million eight hundred and fifty eight thousand nine hundred and ninety six✓✓
		1.3.4.	Discrete✓✓
		1.3.5.	14 442 779 – 11 797 561 = 2 645 218✓✓

PART THREE OF QUESTION 1		PART FOUR OF QUESTION 1	
1.1.1.	Three and half a year OR 3,5 year ✓✓	1.1.1.	One day only ✓✓
1.1.2.	Total Repayment Cost = R1 078,26 × 42 = 45 286,92✓✓	1.1.2.	Price before saving R70 + R250 = R320✓✓
1.1.3.	Discount = R29 999,00 × 15% = R4 499,85✓✓	1.1.3.	Ariel ✓✓
1.2.1.	AD : CB = 10,9 : 9,45 = 218 : 189✓✓	1.1.4.	750 m ℓ ÷ 1 000 = 0,75 ℓ ✓✓
1.2.2.	CD = 125,92m – (57,5 + 10,9 + 9,45) = 48,07m✓✓	1.1.5.	Price = R11 × 3 = R33,00 ✓✓
1.2.3.	Radius = $\frac{4,37}{2}$ = 2,365✓✓	1.1.6.	R11; R15; R18; R22; R30; R43; R44; R45; R65; R250 ✓✓
		1.2.1.	English = 35 letters OR 15 letters ✓✓
1.3.1.	C✓✓	1.2.2.	44 0C ✓✓
1.3.2.	Range = 8oC – (– 7oC) = 15oC✓✓	1.2.3.	One unit on the drawing represents twenty-five units in reality ✓✓
1.3.3.	A) B✓✓	1.2.4.	± 61 mm ✓✓
	B) Likely OR Less likely✓✓	1.3.1.	Two Oceans Marathon ✓✓
1.4.1.	Vertical bar graph✓✓	1.3.2.	Comrades Marathon✓✓
1.4.2.	Three hundred and sixty-one thousand nine hundred and forty eight. ✓✓	1.3.3.	R520,00 – R460,00 = R60,00 ✓✓
1.4.3.	Q5✓✓	1.4.1.	12 Hours OR Half a day ✓✓
1.4.4.	150 marks: 180 min 1mark: 1,2 min✓✓	1.4.2.	Discrete ✓✓
		1.4.3.	17 031:13 852✓✓

SECTION 2: QUESTION 2			
2.1.1.	$\frac{1\,140,95}{12}$ = R95,07916667 = R95,08 per kg	2.1.5.	R7,29 × $\frac{25}{100}$ = R1,8225 + R7,29 = R9,1125 = R9,11 OR R9,10
2.1.2.	R11,99 × 6 =R71,94		
2.1.3.	Cost price of an item is the cost of making or purchasing that item.	2.2.1.	A) P = 40 × R12,50 = R500,00
2.1.4.	A) A – Cost of mile per cup: R97,95 × 0,04 kg = R3,92		B) Income in rand = R12,50 × n n = number of cups of milo
	B) B – amount of milk used: $\frac{R1,20}{R11,99}$= 0,1 ℓ		C) Number of cups of milo / n
	C) C – cost of 25 foam cups: R1,78 × 25 = R44,50	2.2.2.	R612,50 = R90,00 + (R9,50 × n) R612,50 - R90,00 = R9,50 × n $\frac{522,50}{9,50}$ =n Q = 55
	D) D – cost of one cup of milo: R3,92 + R1,20 + R0,13 + R1,78 + R0,26 = R7,29		

<table>
<tr><td>2.2.3</td><td colspan="3"> 
</td></tr>
<tr><td>2.2.4.</td><td>(a)
The cost price for the number of cups of Milo sold and the selling price of that number is the same (equal).
No profit or loss. OR
Cost price = Selling price</td><td>2.4.6.</td><td>Total amount = R3 030 + R3 030 + R2 280 + R2 280 + R9 580 + R4 530 + R29 460 + R2 087 + R395,95 + R395,95
= R57 068,90</td></tr>
<tr><td></td><td>(b) 30 cups</td><td>2.4.7.</td><td>Direct deposit</td></tr>
<tr><td>2.3.1.</td><td>R1 200 ÷ 0,10976
= 10 932,94 Yen</td><td>2.4.8.</td><td>Monthly instalment
R40 386,60 ÷ 5
= R8 077,32</td></tr>
<tr><td>2.3.2.</td><td>Weaker</td><td colspan="2"></td></tr>
<tr><td>2.4.1</td><td>Interest refers to the amount that will be added to an account that is not settled yet</td><td>2.5.1.</td><td>Inflation is a measure of rate at which the cost of goods is changing over a period of time and is usually expressed as a percentage</td></tr>
<tr><td>2.4.2.</td><td>R14 819,50</td><td>2.5.2.</td><td>R0,30 OR 30c</td></tr>
<tr><td>2.4.3.</td><td>$\frac{148{,}20}{14\,819{,}50} \times 100\%$
$= 1{,}000033739329937$
$\approx 1\%$</td><td>2.5.3.</td><td>R557,00 – R418,00
= R139,00</td></tr>
<tr><td>2.4.4.</td><td>APG 2039W Design & Theory Studio II</td><td>2.5.4.</td><td>$\%\ change \frac{R75{,}00 - R0{,}25}{R0{,}25} \times 100$
$= 29\,900\%$</td></tr>
<tr><td>2.4.5.</td><td>R14 967,70 – R8 650,00 = R6 317,70</td><td>2.5.5.</td><td>$\frac{100}{117{,}5} \times \frac{104{,}90}{1}$
$= R89{,}28$</td></tr>
</table>

2.6.1.	B OR R241 600 000 000	2.8.2.	$\frac{72}{12}$ = 6 years
2.6.2.	Budget is the proposed way in which money will be spent on different items	2.8.3.	Interest = $\frac{10}{100}$ × R239 900 = R23 990
2.6.3.	Skills development levy institutions	2.8.4.	Amount saved = R331 083 - R239 900 = R91 183
2.6.4.	% Of the total education budget $\frac{15,3}{320,5} \times 100\%$ $= 4,77\%$	2.8.5.	Final amount = R3 099 + $\frac{35}{100}$ × R239 900 = R3 099 + R83 965 = R87 064
2.6.5.	9,7% Accept any estimation from 9,5% but less than 9,86%	2.8.6.	Cost = 45l × R15,81 = R711,45
2.7.1.	All the money earned before deductions	2.9.1.	Pace car rental Total amount = (daily rate × 4 days) + (number of km more than 800 km × R2,42) + refundable deposit = (R290 × 4) + (2 800 km × R2,42) + R10 000 ✓ = R1 160 + R6 776 +R10 000 ✓ = R17 936,00 ✓
2.7.2.	Mr Kivido		
2.7.3.	July		
2.7.4.	$\frac{R2\,251,59}{R30\,021,25} \times 100\%$ = 7,5%		Flexi car rental Total amount = (daily rate × 4 days) + (number of km more than 600 km × R2,82) + refundable deposit = (R326 × 4) + (3 000km × R2,82) +R10 000 ✓ = R1 304 + R8 460 + R10 000 ✓ = R19 764
2.7.5.	A) **N** = R9 362,62 – R(4 736,90 + 2 251,59 + 245,2 + 192,70 + 141,95 + 90,25) = R9 362,62 – R7 658,62 = R1 704,00	2.9.2.	
		2.9.3.	Pace car rental is cheaper.
	B) **M** = R31 221,25 - R9 362,62 = R21 858,63		
2.8.1.	Percentage of the principal amount charged for borrowing money	2.10.1.	Opening balance is the amount that is already in the account at the beginning of the month
		2.10.2.	Opening balance = R1 855,5
		2.10.3.	A = R1855,52 + R1500 = R3 355,52

2.10.4.	VAT exclusive amount = R100 × $\frac{100}{114}$ = R87,71929825 R87,72	2.12.3.	Litres
2.10.5.	Credit	2.12.4.	Monthly sewer charge A = R378,95
		2.12.5.	B = (6 × R8,28) + (4 × R8,79) + (2 × R15,00) = R49,68 + R35,16 + R30,00 = R114,84
2.11.1.	South African Revenue Services		
2.11.2.	R61 296		
2.11.3.	$\frac{R542\,096,76}{12}$ = R45 174,73	2.13.1.	R242 700 million OR R242 700 000 000
2.11.4.	Tax bracket 4	2.13.2. 2.13.3.	1 370 + 242,7 + 180,3 + 31,5 A = 1 824,5 Other 1 823,72 – (278,4+262,4+222,6+211,0 +209,2+208,5+202,2 +112,7) B = 1 823,72 – 1 707 = 116,72
2.12.1.	Market value= R944 630,00 Nine hundred and forty four thousand six hundred and thirty rand.		
2.12.2.	R836,02 × 1,15 = R961,42 R961,42 – R836,02 = R125,40	2.13.4.	Community development = $\frac{208,5}{1\,823,72}$ × 100% = 11,43267607%

2.14.1.

TRANSACTION	FEE (in Rand)
Monthly account fee	**R51,00** ✓
ATM cash withdrawals:	
• Commercial Bank ATM (5,70 x 2)	**R11,40** ✓
• Other bank (6,50 + 5,70 x 2)	**R17,90** ✓
External debit order	**R8,80** ✓
Internal debit order	**R3,30** ✓
External stop order (2 x R 8,80)	**R 17,60** ✓
Online cheque deposit: (0,65 x R 23 5500 ÷100)	**R153,08** ✓
Cash deposit: (1,2% x R 2 425 ÷ 100)	**R29,40** ✓
Total for bank fees:	**R292,48** ✓✓

SECTION 3: QUESTION 3			
3.1.1.	Perimeter: the distance around a two-dimensional shape.	3.4.1.	$5\frac{1}{4}$ inches OR 5,25 inches
3.1.2.	70m + (22m + 100m + 22m) + 70m + (22m + 100m + 22m) = 428 m	3.4.2.	$h = \frac{\text{Volume (in cm}^3)}{\frac{1}{4} \times \pi \times (\text{diameter in cm})^2}$ / $= \frac{20\,000\ \text{cm}^3}{558{,}717431\ \text{cm}^2}$ = 35,79 cm
3.1.3.	22m + 100m + 22m = 144m		
3.1.4.	A = length × width = 144 m × 70 m = 10 080 m^2		
3.1.5.	Lenght of sod of grass: 500 mm= 0,5 m Width of sod af grass: 700 mm = 0,7 m Area of one sod of grass = lenght × bread = 0,5 × 0,7 m = 0,35 m^2	3.5.1.	Volume = It is the amount of solids or liquids an object can take/hold
		3.5.2.	Volume = side × side × height = 0,5 m × 0,5 m × 0,08 m = 0,02 m^3
3.1.6.	Number of sods of grass needed to cover the rugby field: $= \frac{Area\ of\ filled\ surface}{Area\ of\ 1\ sod\ of\ grass}$ $= \frac{10\,080}{0{,}35}$ = 28 800 sods of grass	3.6.1.	A) Area of a face without a circular hole = side × side = 45cm × 45cm = 2 025 cm^2
3.2.1	Radius: 6÷2 = 3 ✓ Volume = π × radius² × height = 3,142 × (3)² × (8,84) = 249,97752 cm³ ✓ = 250 cm✓		B) Area of hole= π × radius2 = 3,142 × 9,5 cm × 9,5 cm = 283,5655cm^2 Area of sides = 2 025 cm2 × 6 – 2 (283,5655 cm2) = 11 582,869 cm^2
3.2.2	250 mℓ ✓✓	3.6.2.	Total surface area of 12 chairs: = 11 582, 869 cm2 × 12 = 138 994,428 cm2 Amount of paint = 138 994,428 mℓ ÷ 15 × 1,8 = (16 679,33136 ÷ 1 000) ℓ ≈ 17 ℓ
3.2.3	8,84 cm × 2 ✓ = 17,68 cm ≈ 18 cm ✓		
3.2.4	Volume = length × breadth × height = 18 cm × 12 cm × 18 cm ✓ = 3 888 ✓ cm³ ✓	3.6.3.	A) Diameter = 7 cm + 7 cm = 14 cm
3.3.1.	Surface area = 2(length × slant height) + (length × breadth) + (base × ⊥ height) = 2(2,45 × 1, 737) + (2,45 × 1,75) + (1,75 × 1,5) = 8,5113 + 4,2875 + 2,625 = 15,4238 cm² = 15,42 cm²		B) Volume of a cylinder= π × (radius)^2 × height 5 000 cm3 = 3,142 × (7)^2 × height Height = $\frac{5000}{3{,}142 \times 7^2}$ = 32,476… cm ≈ 32,48 cm
3.3.2	°C = (°F – 32) ÷ 1,8 = (47°F – 32) ÷ 1,8 = 8,3°C		

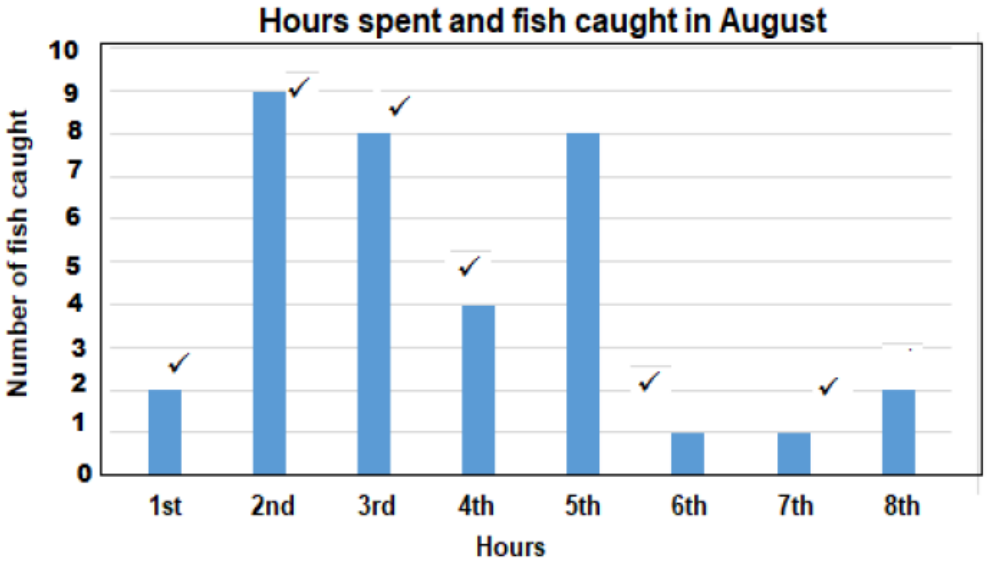
3.7.1.	Amount in kg = 3,5 ÷ 2,25 = 1,556	3.9.1.	$29\frac{3}{4}$ = 29,75 inches
3.7.2.	1 mℓ flour = 0,7 g flour 621× 0,7 g = 437,5 g	3.9.2.	3,5 × 2,54 cm = 8,89 cm
3.7.3.	°C = (°F – 32°) ÷ 1,8 °C = (356° – 32°) ÷ 1,8 °C = (324°) ÷ 1,8 = 180 °C	3.9.3.	5' 5''
3.8.1.	Time in seconds = 6 × 60 + 53 = 413 seconds	3.9.4.	$BMI = \frac{62kg}{1{,}65m}$ $= 22{,}77kg/m^2$
3.8.2.	Total time = 10,8 + 13,6 + 16,1 + 23,1 + 23,2 + 23,9 + 24,3 + 24,8 + 26,7 + 29,3 = 215,8 seconds 215,8 ÷ 60 = 3,596666666667 = 3 minutes + 0,596666666667 × 60 = 3 minutes 35,8 seconds	3.10.1.	A) Number of tyres = $\frac{173}{58}$ = 2,98 = 2 B) Height = $\frac{35{,}5}{15{,}5}$ = 2,29 ≈2 Length/*Lengte* = $\frac{303{,}5}{58}$ = 5,23 ≈ 5
		3.10.2.	Total number = 2 × 2 × 5 = 20

SECTION 4: QUESTION 4			
4.1.1.	Number of passengers = 60 / sixty	4.2.3.	Actual distance = 60 mm × 10 000 000 = 600 000 000 mm ÷ 1 000 000 = 600 km
4.1.2.	Row: K Number: 1 OR 6	4.2.4.	Speed = $\frac{distance}{time}$ $= \frac{597}{7\frac{26}{60}}$ = 80,314 km/h
4.1.3.	SE/South-east		
4.1.4.	P = $\frac{6}{60} \times 100\%$ = 15%	4.3.1.	South West OR SW
4.1.5.	A5 / 5A	4.3.2.	Namaqua National Park
4.2.1.	8/eight airports	4.3.3.	Keimoes, Kakamas, Pofadder
4.2.2.	1 Unit on the map is equal to 10 000 000 units in real life	4.3.4.	Ratio scale OR number scale OR numerical scale

4.3.5.	Measured distance = 135 mm 1 : 3 007 874 135 mm × 3 007 874 = 406 062 990 mm $= \frac{406\,062\,990}{1\,000\,000}$ = 406 km	4.7.1.	There is no seat for Lundi here
		4.7.2.	South
		4.7.3.	A8 A11 A15
4.4.1.	Top view of the house	4.7.4.	35
4.4.2.	03	4.7.5.	B14
4.4.3.	6 : 9 1 : 1 ½	4.7.6.	Row J
4.4.4.	Western wall	4.7.7.	Side BB
4.5.1.	Bar scale/Linear scale Number scale/Ratio scale	4.7.8.	P(seat from side AA) = $\frac{20}{194}$ = 0,10
4.5.2.	One unit on the map/paper represents nine million units in reality	4.8.1.	Route Map
4.6.1.	Number of national roads = 10	4.8.2.	R23 & R11
4.6.2.	South East / SE	4.8.3.	Standerton Harrismith
4.6.3.	N1	4.8.4.	Speed= 110 km/hr Time = 19:30-13:30 = 6 hours Distance = 6 hours × 110 km/hr = 660 km
4.6.4.	N7 and N14	4.9.1.	D, A, C, B
4.6.5.	Colesberg	4.9.2.	Distance = 131 + 247 + 56 = 434km
4.6.6.	27 mm: 300 km 0,09 mm : 1 km 128 mm: actual distance in km Actual distance = $\frac{128}{0,09}$ Actual distance = 1 422,222222 = 1 422 km	4.9.3.	5
		4.10.1.	C; A; E; B; D
		4.9.3.	5
4.6.7.	Number of 100 km = $\frac{1\,422}{100}$ Number of litres = 14,22 × 5,9 = 83,898litres	4.10.	C; A; E; B; D

SECTION 5: QUESTION 5			
5.1.1.	23,1 KG	5.2.1.	Gauteng
5.1.2.	13 13,8 14,7 14,8 15,2 17,8 18,5 18,5 18,5 19,7 21,3 22 22 23,1 25	5.2.2.	Mean (58 372 + 22 465 + 63 092 + 84 810 + 51 650 + 34 034 + 8 841 + 24 876 + 33 254) ÷ 9 = 381 394 ÷ 9 = 42 377,11 Freestate, Mpumalanga, Northern Cape, North West, Western Cape
5.1.3.	18,5 KG		
5.1.4.	18,5 KG		
5.1.5.	FEMALE MASS 13 KG 15 YEARS	5.2.3.	295; 370; 1 058; 1 232; 2 768; 3 257; 4 264; 4 989; 18 986 Median = 2 768
5.1.6.	Range = 52-15 = 37	5.2.4.	Range = 2 808 137 – 287 435 = 2 520 702
5.1.7.	Average = $\frac{37+\cdots\ldots\ldots+16}{15}$ $= 486 \div 15$ $= 32{,}4\ years$	5.3.1.	Observation
5.1.8.	8:7	5.3.2.	Discrete
5.1.9.	$\frac{5}{15} = \frac{1}{3}$	5.3.3.	No. of cars washed = 14 + 8 + 16 + 11 + 8 + 20 + 14 + 11 + 17 + 5 = 124
5.2.1.	Gauteng	5.3.4.	P (washing a Toyota car) = $\frac{20}{67}$ = 0,29
5.1.8.	8:7	5.4.1.	Range = 3,316 kg – 0,182 kg = 3,134 kg
5.1.9.	$\frac{5}{15} = \frac{1}{3}$	5.4.2.	1,668 kg
		5.4.1.	Average = 1,26 ×2 +1,371 ×9 +1,668 ×8 + 1,746 ×4 + 1,849 ×8 + 2,163 +2,333 + 3,128 ×2 = $\frac{60{,}731}{35}$ = 1,735 = 2 k
		5.4.2.	22
		5.4.3.	Probability = $\frac{8}{35}$ × 100% = 22,9 %

5.4.6.



5.4.7. 0,182; 0,182; 0,182; 0,309; 0,729; 0,729; 0,729; 0,856; 0,856; 0,856; 0,856 0,936; 2,448; 2,448; 2,449; 3,038; 3,316; 3,316; 3,316; 3,316; 3,316; 3,316

Q2=Median=0,856+0,936 /2 = 0,896
Q3=3,316

5.4.8. 3,316 kg

5.4.9. % Of total fishes

$= \frac{8}{57} \times 100 = 14{,}04\%$

5.4.10. 3rd hour

5.4.11. 1,1,1,1,2,3,3,4,6

Distance	Tally	Frequency	
0 – 0,5	||||// ||	7	
0,6 – 1	||||//	5	✓A
1,1 – 1,5	||||// |	6	
1,6 – 2	||	2	✓A
2,1 – 2,5	|	1	
2,6 – 3	|||	3	✓A
3 – 3,5	|	1	
TOTAL:		25	✓✓A

5.6. A) IQR= R40 668 – R32 136
= R8 532

B) 36402 Between 36300 – 36500

5.7.1. Sport = 100% – (42,9 + 2,8 + 11 + 20,7 + 2,4 + 18,4 +0,7)%
= 1,1%

5.7.2. Car/Motorcar

5.7.3. P (people travelling by bus) = 7,8%

$= \frac{7{,}8}{100} = \frac{39}{500}$

5.8.1. R2 085 600 000 OR R2 085,6 million

5.8.2. $\frac{R1\,323 + \cdots \ldots \ldots + R2\,732}{6}$

= R2 217 933 333 OR R2 217,933333 mil

5.8.3. Maximum = 46,1 thousand

5.8.4. $A = \frac{2\,158\,000\,000}{3\,441\,000\,000\,000} \times 100\%$
$= 0{,}062714327\% \approx 0{,}06\%$

5.9.1. 0,1 = 10%

5.9.2. (a) R N or N R

(b)D L or L D

5.9.3. $0{,}05 = \frac{5}{100} = \frac{1}{20}$

5.9.4. 1 562 × 0,8 = 1 249,6
≈ 1 249 or 1250

PAPER TWO

SECTION 6

QUESTION 2: Adapted from NSC 2018 March Paper 2

2.1.1

32 OR 31

2.1.2

Total credit ✓MA
= – R37,81 + (–R200,00) + (–R0,01)
= – R237,82 ✓CA

Total debit ✓MA
= R200,00 + R4,00 + R31 716,69 + R10 770,00
= R42 690,69 ✓CA

✓MA
Closing balance = R42 690,69 + (– R237,82)
= R42 452,87

2.1.3

✓✓O
Safety reasons **OR** prevent Fraud / Confidentially/
Account number private to Mr Son only

2.1.4

Insurance premium
= R42 452,87 ÷ R1 000 ✓M
= 42,45287 ✓CA
≈ 43 ✓R

Insurance cost
= 43 × R3,50 ✓MA

= R150,50 ✓CA

2.1.5

The bank owes Mr Son R 37,81 ✓✓O
OR
The account has a credit balance ✓✓O
OR
Over-payment from previous months. ✓✓O

2.1.6

Does not have large amounts of cash to purchase expensive goods OR
Easier/convenient to settle expensive items with smaller monthly payments OR
Loyalty points OR Safety OR Any relevant opinion.

2.2

Distance = average speed × time
✓SF
34 km = 85 km per hour × time

Time = 0,4 hours ✓A

= 24 minutes ✓C

Mr Son left home at 24 minutes before 12:10
= 11:46 ✓CA
He did NOT leave at 11:40 ✓O

2.3.1

No data was available for Japan OR
The books were not purchased on time.

2.3.2.

Range = maximum – minimum ✓M

463 223 = maximum – 4 612 ✓A

Maximum = 463 223 + 4 612

= 467 835 ✓A

2.3.3

✓MA
4 612; 6 373; 8 870; 24 177; 43 146; 47 352;
64 117; **76 434;** 77 910; 93 600 ; 95 483; 184 000;
304 912; 444 000; 467 835 ✓CA

Median = 76 434 ✓✓CA

2.3.4

No mode

2.3.5

7 countries

2.3.6

$$P = \frac{12}{15} \times 100\% \quad \checkmark A \quad \checkmark A$$

= 80% ✓CA

QUESTION 4: Adapted from NSC 2018 March Paper 2

4.1.1 (a)

R105 = cost of T-shirt + cost of Shorts + printing
✓A ✓A ✓A
= R50,00 + R35,00 + 2 × R10

(b)

Total cost = R10 000 + R105 × 500 ✓SF

= R62 500 ✓A

4.1.2

87,5 thousand rand = R87 500 ✓A

$A = \frac{R87\ 500,00}{R125,00}$ ✓M

= 700 ✓CA

$B = \frac{800 \times 125}{1\ 000}$ ✓M ✓A

= 100 ✓CA

4.2

For Scale: 1 : 3

Total length of the set = 71 cm + 34 cm = 105 cm ✓M ✓A

Scaled length of the set = 105 cm ÷ 3 ✓M

= 35 cm ✓CA

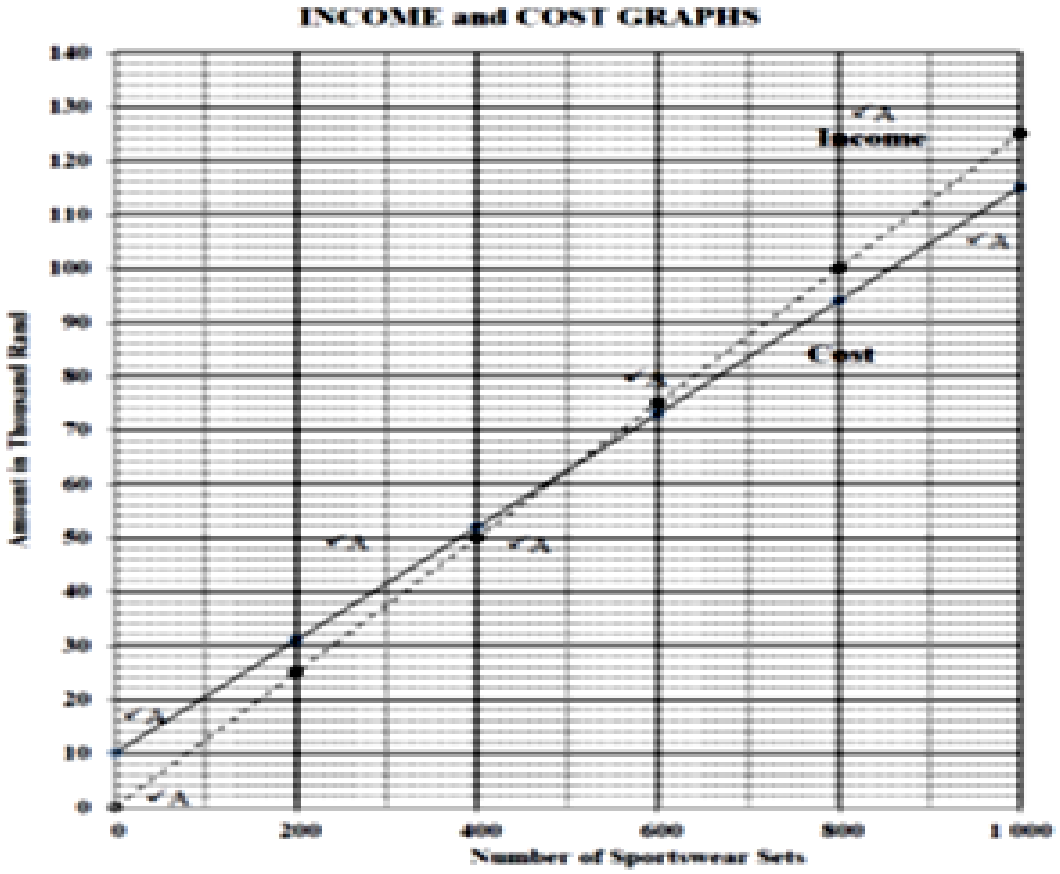
Length of page is 29,6 cm (does not fit) ✓O
The width of the T-shirt = 57 cm
Scaled width = 19 cm

Hence the scale 1 : 3 should NOT be used ✓O

4.3.1

Convenient ✓✓O
OR
Cheaper ✓✓O
OR
Any other relevant opinion

4.1.3



3 A for each graph (start point, any other point, correct straight line)
1A Graphs clearly labelled.

4.1.4	(a)	Number of Sets = 500 ✓CA Income at break-even point = R62 500 or R62,5 thousand ✓CA	4.3.2	✓A Electronics 51% – 43% = 8% ✓M ✓A Sports equipment 44% – 36% = 8%
	(b)	Number of sets = 800 ✓✓✓RT	4.3.3	Groceries ✓A Fresh produce like bread and milk is immediately available. ✓✓O OR ✓✓O Wrong items will not be delivered to your home

QUESTION 2: Adapted from NSC 2017 May/June NSC Paper 2

2.1.1 (a)

✓RT
Amount × (106,18%) = R14,44
✓A
K = R14,44 ÷ 106,18 % or 1,0618
= R13,599
= R13,60 ✓R

(b)

$$Q = \frac{\overset{\checkmark RT}{R11,50} - \overset{\checkmark M}{R10,88}}{R10,88} \times 100\% \ \checkmark F$$

= 5,7 ✓CA

(c)

$$E = \frac{\overset{\checkmark MA}{0,99 + 17,32 + 15,07 + 5,99 + 9,42 + 8,16 + 4,46 + 9,04 + 10,27 + 15,64}}{\underset{\checkmark MCA}{10}}$$

$$= \frac{96,36}{10}$$
= 9,64 ✓CA

2.1.2

Apr. 2015 to Jan. 2016: both prices increased. ✓✓J

Jan. 2016 to Apr. 2016:
The price of the 600 g loaf of white bread remained the same (is constant). ✓J

The price of the 700 g loaf of white bread increased ✓J

2.3.2

Number of crates lengthwise
$= \frac{2}{0,69}$ ✓M ✓C
= 2,89
∴ 2 crates ✓CA

or $\frac{2000}{690}$ = 2,89

Number of crates breadthwise
$= \frac{2}{0,445} = 4,4$
∴ 4 crates ✓CA

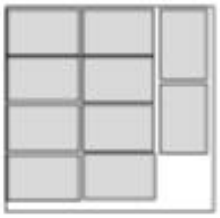
or $\frac{2000}{445}$ = 4,4

Now the remaining space is 0,62 m × 2 m
∴ Turn crates: 1 more fit in $\left(\frac{0,62}{0,445}\right)$ and two down

Total ✓M
= (2 Lengthwise × 4 breadth wise + 2) × 9 on top of each other
= 90 crates ✓CA

∴ 80 will fit ✓J

Layout:



		2.3.3.	Number of loaves = 80 × 8 = 640 ✓A Cost price per bread = $\frac{R5\,350}{640}$ ✓M = R8,36 ✓CA Number of loaves to break even = $\frac{FC}{SP-CP}$ = $\frac{R1\,720,70}{R11,50-R8,36}$ ✓SF = 548 ✓CA
2.1.3	He will have to adjust his spending ✓✓J to cater for the increased price. That is money that he was saving to use for other things will be used for wheat products.		
2.2	Increase in 2017 = 6,6% × R6,72 ✓MA = R0,44 ✓A Increased price = R6,72 + R0,44 ✓M = R7,16 ✓CA Increase in 2018 = R7,16 × 6% = R0,43 ✓CA Increased price = R7,17 + R0,43 = R7,59 ✓CA		
2.3.1	V = 690 mm × 445 mm × 180 mm ✓SF = 55 269 000 mm^3 ✓✓CA		

QUESTION 2.3: Adapted from NSC 2017 Nov Paper 2			
2.3.1	India	2.3.4	India: Mean Daily wage = $\frac{236,51}{93,76\%}$ ✓RT ✓MA = 252,25 Rouble ✓A SA: Mean Daily wage = $\frac{237,35}{26,20\%}$ = 905,92 Rouble ✓A Difference = (905,92 – 252,25) Russian Rouble ✓M = 653,67 Russian Rouble ✓CA
2.3.2	0,02 0,52 **0,63** 0,91 1,12 **1,23** 2,03 2,17 **2,97** 3,62 4,11 IQR = $Q_3 - Q_1$ ✓M = 2,97 – 0,63 ✓A ✓A = 2,34 ✓CA		
2.3.3	Countries with high rankings are developed (rich, 1st world) as well as underdeveloped/developing (poor, 3rd world). **OR** Countries with low rankings are developed (rich) as well as underdeveloped/ developing (poor). **OR** Counties listed are from all over the world (different continents). ✓✓O	2.3.5	Range = 425,52 – 21,44 ✓A = 404,08 Russian Rouble 1 Russian Rouble = 0,016 Euro ✓M ∴ 404,08 Russian Rouble = 404,08 × 0,016 Euro = 6,46528 Euro ✓C 1 South African Rand = 0,070 Euro ∴ $\frac{6,46528}{0,07}$ ✓C = R92,36 ✓A Learner solution is incorrect ✓O

QUESTION 2: Adapted from NSC May/June 2019 Paper 2

2.1.1 (a)

NOTE: 2.1.1 IS NOT TO BE MARKED, MARKS WILL BE SCALED
LET WEL: 2.1.1 WORD NIE GEMERK, PUNTE SAL AANGEPAS WORD

Total surface area/*Totale buite oppervlakte*
$= 2(L \times W) + 2(L \times H) + 2(W \times H)$ ✓C
$= 2(6,5 \times 6,5) + 2(6,5 \times 12,5) + 2(6,5 \times 12,5)\ cm^2$ ✓SF
$= 2(42,5)\ cm^2 + 2(81,25)\ cm^2 + 2(81,25)\ cm^2$ ✓S
$= 84,5\ cm^2 + 162,5\ cm^2 + 162,5\ cm^2$
$= 409,5\ cm^2$ ✓CA

2.1.1. (b)

To appeal to young children. ✓✓O
Om die medisyne vir die kinders aantreklik te maak.

OR/*OF*

To advertise the medicine/*Om die medisyne te adverteer* ✓✓O

OR/*OF*

To show it is for children/*Om aan te toon dat dit vir kinders is* ✓✓O

2.1.2

radius $= \frac{2,52\ cm}{2} = 1,26\ cm$ ✓A

10 $m\ell$ ✓SF $= 3,142 \times (1,26\ cm)^2 \times h$

$\frac{10cm^3}{4,9882392cm^2} = h$ ✓M

$2,0047\ldots m = h$ ✓CA

2.2.

Number of boxes in one carton
Aantal bokse in een karton
$= 6 \times 8 \times 4$ ✓M
$= 192$ ✓A

Total number of boxes
Totale aantal bokse
$= 192 \times 5$ ✓M
$= 960$ ✓A

In each carton 1 layer has $6 \times 8 = 48$ boxes ✓
Each carton has 4 layers $48 \times 4 = 192$ boxes ✓
They ordered 5 cartons ✓
$192 \times 5 = 960$ boxes ✓

OR/*OF*

2.3.1

Range = N – Lowest value ✓M
Omvang = N – laagste waarde
4 527 = N – 612 ✓SF
4 527 + 612 = N ✓M
5 139 = N ✓CA

2.3.2

612 , **1 280** , 2 221 , 3 051 , **3 429** , 5 139 ✓M

Interquartile Range /*Interkwartiel omvang*
✓A ✓A
$= 3\,429 - 1\,280$ ✓M
$= 2\,149$ ✓CA

2.3.3

Total/*Totaal*
$= 1\,280 + 612 + 3\,051 + 2\,221 + 5\,139 + 3\,429 + 76$
$= 15\,808$ ✓MCA

Percentage $= \frac{76}{15\,808} \times 100\%$ ✓RT ✓M
$= 0,48\%$ ✓CA
$= 0,5\%$

It is correct, due to rounding. ✓O

2.3.4

Number hospitalised < 6 months
Aantal gehospitaliseer< 6 maande
$= 1\,280 \times 44,2\%$ ✓MA
$= 565,76$ ✓A

Number hospitalised 20+/*Aantal gehospitaliseer 20+*
$= 3\,429 \times 7,6\%$
$= 260,6$ ✓A

Difference/*Verskil* = 565,76 – 260,60
= 305,1 ✓CA
= 305

QUESTION 3: Adapted from NSC May/June 2019 Paper 2

3.1.1

3 200 ✓✓ RT

[Accept values from 3 100 to 3 250
Aanvaar waardes van 3 100 tot 3 250]

3.1.2

Contract 2

3.1.3

Total cost = fixed cost + cost per page ✓A
= R625 per month for the first 600 pages + ✓RT
(R1 475 – R625) – (4 000 – 600) per page more than 600 ✓RT ✓M
= R625 for the first 600 pages + R0,25 per page extra ✓CA

Totale koste = vaste koste + koste per bladsy ✓A
= R625 per maand vir die eerste 600 bladsye + ✓RT
(R1 475 – R625) + (4 000 – 600) per bladsy meer as 600 ✓M
= R625 vir die eerste 600 bladsye + R0,25 per ekstra bladsy ✓CA

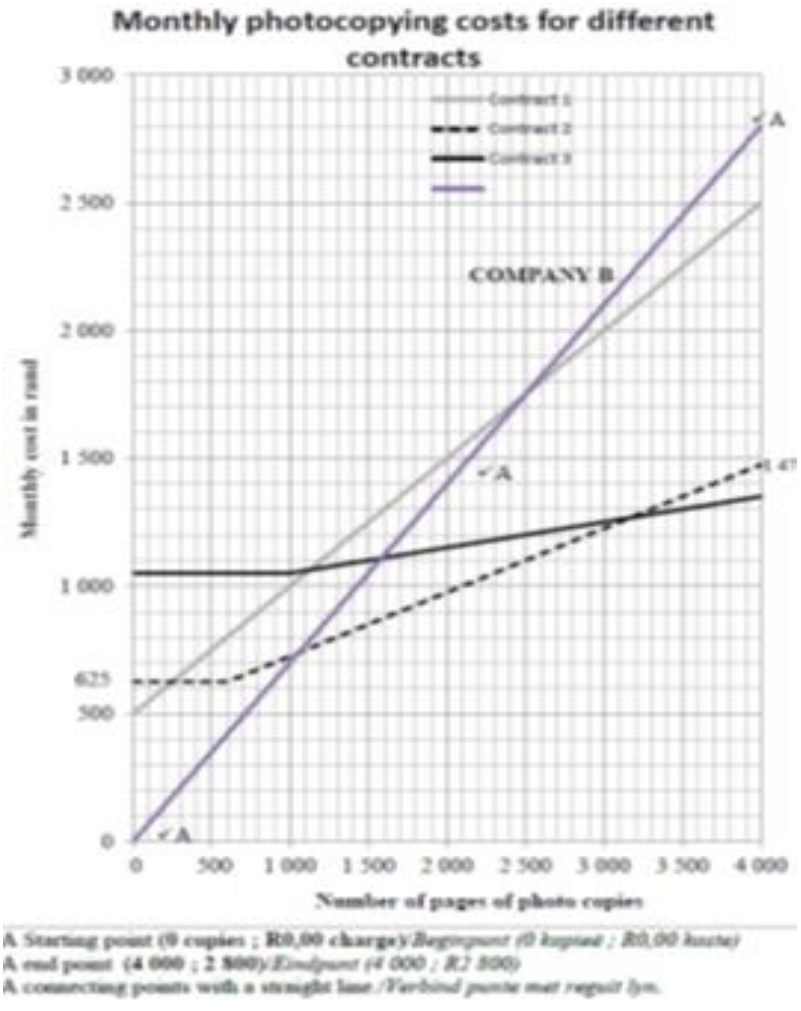
3.3.1

100% – 58,5 % = 41,5 % ✓M

Length of truck on original picture
Lengte van vragmotor op die oorspronklike prent
$= \frac{76\text{ mm}}{41{,}5\ \%}$ ✓M
= 183 mm

Length of the real truck
Lengte van die werklike vragmotor
= 183 mm × 50 ✓M
= 9156 mm ✓S = 9,156 m ✓C

3.1.3



A Starting point (0 copies ; R0,00 charge)/*Beginpunt (0 kopieë ; R0,00 koste)*
A end point (4 000 ; 2 500)/*Eindpunt (4 000 ; R2 500)*
A connecting points with a straight line/*Verbind punte met reguit lyn.*

3.3.2

A$ 45 × 300 ✓M = R9,41564/A$
= R127 111,14 ✓C

VAT/BTW = R127 111,14 × 15 %
= R19 066,67 ✓CA

Import duties/*Invoerbelasting*
= R127 111,14 × 4,7%
= R5 974,22 ✓CA

Cost/*Koste* = R127 111,14 + R19 066,67 + R5 974,22
= R152 152,03 ✓CA

NOT correct/*NIE korrek NIE* ✓O

3.2.	The electrical lead is crossing the floor. ✓A This can be dangerous since persons can step on it an perhaps unplug the copier which might damage th machine or ✓✓O A person can trip over the lead and fall causing injury.

QUESTION 5: Adapted from NSC 2019 May Paper 2

5.1

Motor claims/*Motor eise* ✓RT
= R100 712 182 – (R18 513 071 + R15 498 565 + R7 339 724 + R6 463 292)
✓M
=R100 712 182 – R47 814 652
= R52 897 530
= R53 million/*miljoen* ✓CA

5.1.2

Total/*Totaal* 2016 × 60% = R59 438 533 ✓M
Total/*Totaal* 2016 = R59 438 533 ÷ 60% ✓M
= R99 064 221,67 ✓A
✓M
Difference/*Verskil* = R99 064 221,67 – R87 101 354
= R11 962 867,67 ✓CA

5.1.3

$$\text{Percentage difference} = \frac{\text{New value} - \text{Old value}}{\text{Old value}} \times 100\% \quad \checkmark A$$

$$\textit{Persentasie verskil} = \frac{\textit{Nuwe waarde} - \textit{Ou waarde}}{\textit{Ou waarde}} \times 100\%$$

$$= \frac{R11829111 - R15\,498\,565}{R15\,498\,565} \times 100\% \quad \checkmark A \ \checkmark RT$$

= – 23,676...% ✓CA
= – 24%

5.1.4 (a)

Percentage Household/*Persentasie Huishoudelik*
$= \frac{7\,339\,724}{100\,712\,182} \times 100\%$ ✓RT ✓M
= 7,28782... % ✓A
Percentage Other/*Persentasie Ander*
$= \frac{6\,463\,292}{100\,712\,182} \times 100\% = 6,41758...\%$ ✓A
Her statement is valid; the percentage should be 6% if rounded down. ✓O

5.1.4 (b)

When subtracting the percentages of Commercial, Home owner, Household and motor from 100% Other will be 7% due to %values in a circle diagram. ✓✓O
OR Percentages were rounded.

5.1.5

Number of successful claims/*Aantal suksesvolle eise*
= 14,0858% × 2 144 ✓MA
≈ 302 ✓A
Average paid out/*Gemiddeld uitbetaal*
$= \frac{R11\,829\,111}{302}$ ✓M
= R39 169,24 ✓CA

5.1.6

The percentage of commercial claims went down ✓A from 2015 to 2016 but then again went up from 2016 to 2017. ✓A

5.2

Number of days/*Aantal dae*
= 21 (July/*Julie*) + 31 + 30 + 31 + 3 ✓MA
= 116 ✓A
It is not valid./*Dit is nie geldig nie.* ✓O

5.3

Accept one of the following
The insurance company believes the claim is not valid.
They suspect it is a fraudulent claim.
They don't believe the item was specified.
Under insured / Unpaid premiums
Too many claims to date ✓✓O
Negligence on the side of the client

SECTION 7

QUESTION 1:Adapted from NSC 2018 March Paper 2

1.1.1

Number of days = 10 ✓A

Number of hours per day = 10 ✓A

Total hours = 10 × 10 =100 ✓CA

1.1.2

VAT on teens ticket

$= R50 \times \frac{14}{114}$ ✓RT ✓MA

= R6,14035

≈ R6,14 ✓RCA

1.1.3

$P(\text{Friday}) = \frac{2}{10}$ ✓A ✓CA

$= \frac{1}{5}$ or 20% or 0,2 ✓CA

1.1.4

For 23 April:

Total ticket cost = 2 × R150 + R50 + R50 + R20 ✓RT ✓M

= R420 ✓CA

For 20 April:

Total ticket cost = 2 × R75 + R25 + R50 + R20 ✓A

= R245 ✓CA

Amount saved in rand = R420 – R245 = R175 ✓CA

Percentage savings $= \frac{175}{420} \times 100\%$ ✓M

= 41,66...% ✓CA

Mrs Abrahams statement is **VALID** ✓O

QUESTION 1: Adapted from NSC 2017 May Paper 2

1.1.1

Probability $= \frac{3}{15}$ ✓A ✓A

= 0,2 ✓CA

1.1.2

6 members scores decreased.

As a percentage $= \frac{6}{15} \times 100\%$ ✓A ✓MA

= 40% ✓CA

1.1.3 (a)

Arranging scores in ascending or descending order:

27; 28; 30; **32**; 34; 38; 41; **42**; 43; 43; 44; **46**; 53; 56; 62 ✓MA

Median is 42. ✓✓A

1.1.4

Points : 3 × 1 = 3
8 × 2 = 16
3 × 3 = 9 ✓MA ✓M ✓A

Point scored = 3 + 16 + 9 = 28

Player F ✓CA

1.2.1

Points : 3 × 1 = 3
8 × 2 = 16
3 × 3 = 9 ✓MA ✓M ✓A

Point scored = 3 + 16 + 9 = 28

Player F ✓CA

1.2.2

45 cm : 3,66 m ✓MA

0,45m : 3,66 m ✓C

15 : 122 ✓CA

1.1.3 (b)	43 ✓✓A	1.2.3	Shaded Area = $\pi r^2_{(hoop)} - \pi r^2_{(ball)}$ ✓A $= 3{,}142 \times (22{,}5\text{cm})^2 - 3{,}142 \times (12{,}4\text{cm})^2$ ✓M ✓A ✓SF $= 1\,590{,}6375\ \text{cm}^2 - 483{,}11392\ \text{cm}^2$ ✓CA ✓CA
1.1.3 (c)	IQR = upper quartile – lower quartile $= Q_3 - Q_1$ $= 46 - 32$ ✓RT ✓RT $= 14$ ✓CA		
1.3	Proportional price money: Y group share R8,1 mil $\times \frac{3}{9}$ ✓M ✓MA = R2,7 mil ✓CA Each member of Y group will receive = $\frac{2{,}7\text{ million}}{5}$ ✓M = R0,54 mil ✓CA $0{,}54 \times 1\,000\,000$ ✓C = R540 000 The player was correct. ✓O	OR	Group Y receives $\frac{3}{9}$ of the share ✓✓MA Each member receives $\frac{1}{5}$ ✓A A player from Y = $\frac{3}{45}$ ✓M × 8,1 million = 0,54 million ✓CA = R540 000 ✓C The statement is correct ✓O

QUESTION 4.			
4.1.1.	$37\,001 - $87\,000 ✓RT $87\,001 - $180\,000. ✓RT $180 001 and over. ✓RT [Accept $0 – $1 200]	4.2.1	Mary Rose restaurant ✓A; Denmark hotel ✓A; Civic Centre ✓A
		4.2.2	Because it runs over the river. ✓✓O
4.1.2	Pay extra tax (2% on taxable income) ✓✓O	4.2.3	North west ✓✓RT OR NW ✓✓RT OR West of North ✓✓RT
4.1.3		4.2.4	Turn right walk along Walker Str ✓A Turn right into Strickland Str ✓A Pass South Coast Highway And turn left into Mount Shadforth Rd ✓A Restaurant will be on his right

	Tax due 2016: ✓RT ✓SF = \$54 547 + 45% × (\$289 303,26 − \$180 000) = \$54 547 + 45% × \$109 303,26 =\$54 547 + \$49 186,47 =\$103 733,47 ✓CA Medical levy = \$289 303,26 × 2% = \$5 786,07 ✓MA Total due = \$103 733,47 + \$5 786,07 = \$109 519,54 ✓CA **Tax due 2017:** ✓RT ✓SF = \$54 232 + 45% × (\$311 001 − \$180 000) = \$54 232 + 45% × \$131 001 = \$54 232 + \$ 58 950,45 = \$113 182,45 ✓CA Medical levy = 2% × \$311 001 = \$6 220,02 Total for 2017: \$113 182,45 + \$6 220,02 ✓CA = \$119 402,47 ✓M Tax due difference: \$119 402,47 − \$109 519,54 = \$9 882,93. ✓CA The statement is VALID. ✓O	4.2.5	Measured distance between = 23 mm ✓✓MA Scale 23 mm is 100 m ✓C How long it will take him = Time = $\frac{\text{Distance}}{\text{Speed}}$ ✓F = $\frac{100\text{m}}{1{,}1\text{m/s}}$ ✓A = 90,91 seconds ✓CA ✓C ✓CA In minutes 90,909 ÷ 60 = 1,52 minutes. ✓O No. He can walk in less than 2 minutes at that speed.

QUESTION 2: Adapted from NSC 2017 Nov Paper 2			
2.1.1	✓✓O Inland prices have higher costs for transport / storage. **OR** ✓✓O Coastal storages are close by and transport fees are lower. **OR** Fuel is imported via harbours. ✓✓O **OR** Most refineries are along the coast. ✓✓O	2.1.3	✓M Number of litres consumed = 1 250 km × 7,3 ℓ ÷ 100 km = 91,25 ℓ ✓A Inland cost = 91,25 ℓ × R12,32/ ℓ = R1 124,20 ✓CA Coastal cost = 91,25 ℓ × R11,94/ ℓ = R1 089,525 ≈ R1 089,53 ✓CA Statement is NOT valid. ✓O
2.1.2	\$ = $\frac{\text{R2,67}}{\text{R12,32}}$ ✓A × R616,00 ✓M = R133,50 ✓CA OR $\frac{\text{R2,67}}{\text{R2,34}}$ × R117		

QUESTION 4: Adapted from NSC 2017 Nov Paper 2

4.1.1

Dineo's maximum wind speed is 95 (MPH)

$$95\ \text{MPH} = \frac{80,4672}{50} \times 95\ \text{km/h} \quad \checkmark C$$

$$= 152,887\ldots\ \text{km/h} \quad \checkmark CA$$

$$= 152,89\ \text{km/h} \quad \checkmark R$$

4.1.2

Measured distance between gridlines is 17 mm ✓A
Measured distance between P and Q is 39 ✓A

$$\text{Actual distance} = \frac{205,043\ \text{km}}{17\ \text{mm}} \times 39\ \text{mm} \quad \checkmark M \checkmark MCA$$

$$= 470,39\ \text{km} \quad \checkmark CA$$

Distance = Ave. speed × time

$$\text{Ave. speed} = \frac{470,39\ \text{km}}{24\ \text{hours}} \quad \checkmark S \checkmark SF$$

$$= 19,56\ \text{km/h} \quad \checkmark CA$$

(Accept 16 mm to 18 mm for gridlines and 38 mm to 42mm for PQ distance)

4.2.4

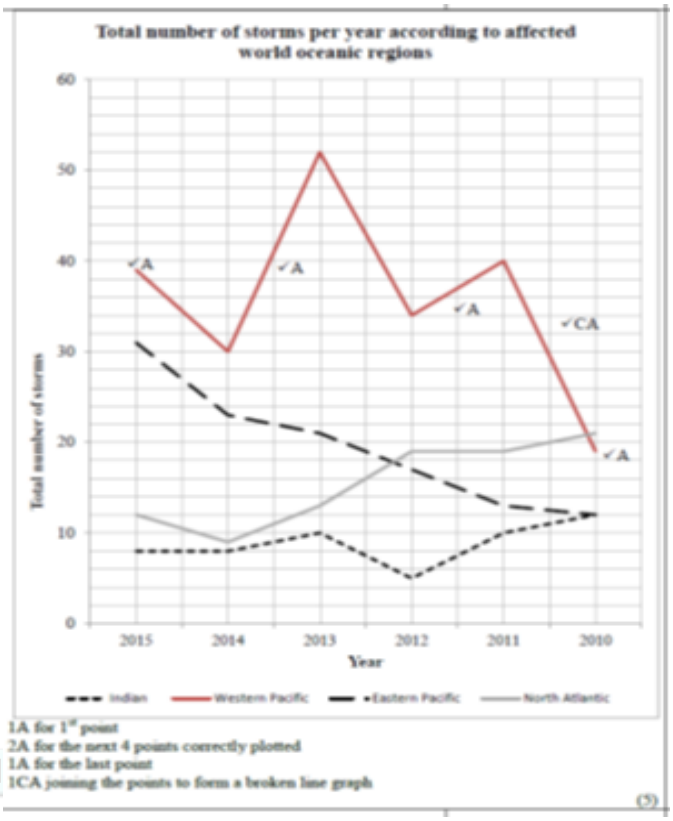
Western Pacific:
Total storms = 39 + 30 + 52 + 34 + 40 = 195 ✓A
Damages in million USD ✓RT
= 10 200 + 8 410 + 22 800 + 6 080 + 10 600 = 58 090 ✓MCA

North Atlantic:
Total storms = 12 + 9 + 13 + 19 + 19 = 72 ✓CA
Damages in million USD ✓RT
= 590 + 232 + 1510 + 75 000 +21 000 = 98 332 ✓CA

NOT valid statement. ✓O

Western Pacific had the most storms but North Atlantic had the greatest amount of damages. ✓✓O

4.2.2



1A for 1st point
2A for the next 4 points correctly plotted
1A for the last point
1CA joining the points to form a broken line graph
(5)

4.2.1

10 ✓✓RT

4.2.3

North Atlantic ✓✓RT

QUESTION 4: Adapted from NSC 2019 May Paper 2	
4.1.1.	SW (South west/*Suidwes*) ✓✓ A
4.1.2	✓✓ A Part or sections of the railway line are not seen from above. *'n Gedeelte van die treinspoor is nie sigbaar op die kaart*
4.1.3	Toyota or 11 ✓✓ A
4.1.4	✓ A ✓ A Proceed straight on Stateway Street until you turn right at ✓ A the City Council into Arrarat Street. Then proceed straight ✓ A ✓ A until Alma. Destination is on the left-hand side.
4.1.5	Distance between Alfa and Engen circles = 5mm ✓ A *Afstand tussen Alfa- en Engenzirkels = 5mm* ∴ 5mm = 500m ✓ CA 1mm = 100m or 1: 100 000 ✓A Distance between circles 13 and 14 is 28 mm = 1,4 km *Afstand tussen sirkels 13 en 14 is 28 mm = 1,4 km* ∴ 28 mm = 1 400 m 1mm = 50m or 1 : 50 000 ✓ CA This map is NOT drawn to scale. ✓ O *Die kaart is nie volgens skaal geteken nie.* **4 – 7 for distance between Afla and Engen** **24 – 29 for distance between 13 and 14**
4.1.6	Speed/*Spoed* = 4 km ÷ 5 min ✓ MA = 0,8 km/min × 60 min/hour ✓ C = 48 km/h ✓ CA The car's speed was less than the limit. ✓ O
4.1.7	$P = \frac{3}{20}$ ✓RT ✓RT = 0,15 ✓ S Valid/*Geldig* ✓O

<table>
<tr><th colspan="4">SECTION 8</th></tr>
<tr><th colspan="4">QUESTION 3: Adapted from NSC 2018 March Paper 2</th></tr>
<tr><td>3.1</td><td>Area of display
= length × width
= 48 inches × 36 inches ✓SF
= 48 × 25 mm ✓C ÷ 10 ✓C × 36 × 25 mm ÷ 10
= 120 cm × 90 cm = 10 800 cm² ✓CA
Total area of 25 displays
= 10 800 cm² × 25 ✓M
= 270 000 cm² ✓CA
Amount of whiteboard paint needed
= 270 000 cm² ✓M ÷ 50 cm²
= 5 400 mℓ ✓CA ÷ 1 000 ✓C = 5,4 litres
5ℓ is not enough. ✓O</td><td>3.3.1</td><td>Easily accessible to all stands ✓✓R
Any other relevant reason</td></tr>
<tr><td></td><td></td><td>3.3.2</td><td>Maximum number of HEI from the USA
= 6 × 6 ✓M ✓A
= 36 ✓CA</td></tr>
<tr><td></td><td></td><td>3.3.3</td><td>$P_{(\text{Not China})} = \frac{288}{324}$ ✓A ✓A
$= \frac{8}{9}$ or 0,89 or 88,89% ✓CA</td></tr>
<tr><td></td><td></td><td>3.3.4</td><td>Delivery entrance 3 ✓✓A
L01 ✓✓A</td></tr>
<tr><td></td><td></td><td>3.3.5</td><td>L 42 ✓✓A</td></tr>
<tr><td>3.2</td><td>Total Surface Area of cylinder A
= π × diameter × height
= 3,142 × 30 × 30 ✓SF
= 2 827,80 cm² ✓CA
Total Surface Area of decorative sticker for cylinder A
= 2 827,80 cm² + (1 × 30) cm² ✓M
= 2 857,80 cm² ✓CA
Total Surface Area of cylinder B
= π × diameter × height
= 3,142 × 40 × 20
= 2 513,60 cm² ✓CA
Total Surface Area of decorative sticker for cylinder B
= 2 513,60 cm² + (1 × 20) cm²
= 2 533,60 cm² ✓CA
Correct, B will require less ✓O</td><td>3.3.6</td><td>Length of Information centre on plan = 70 mm ✓A
Scale = 70 mm : 24 500 mm ✓C ✓M
$= \frac{70\,\text{mm}}{70\,\text{mm}} : \frac{24\,500\,\text{mm}}{70\,\text{mm}}$ ✓M
= 1 : 350 ✓CA</td></tr>
</table>

QUESTION 3.2: Adapted from NSC 2017 May Paper 2

3.2.1

Total distance of a space and a post
= 100 mm + 40 mm
= 140 mm ✓A

or 0,1 m + 0,04 m
= 0,14 m

Distance between posts that must have a space and a post
= 3 460 mm – 100 mm
= 3 360mm ✓M

or 3,460 m – 0,14 m
= 3,360 m

Number of small posts = $\frac{3360}{140}$ ✓M
= 24 ✓CA

or $\frac{3,360}{0,140}$
= 24 m

3.2.2

✓✓J
Direct sunlight coming into the rooms through the windows for much longer.

OR Any other relevant reason

3.2.3

Open outward because they have short width ✓✓O

3.2.4

Carpeted floor = Area of a Passage + Dining + Living rooms

DR area = 3,3274 × 3,6576 ✓SF
= 12,17029824 m^2 ✓CA

LR area = 4,5720 × 4,2672
= 19,5096384 m^2 ✓CA

✓M
Area of passage = 15% of (12,17 + 19,51) m^2
= 15 % of 31,68 m^2
= 4,751990496 m^2 ✓CA

Total area = 12,17 m^2 + 19,51 m^2 + 4,75 m^2 ✓M
= 36,43 m^2 ✓CA
≈ 37 m^2 ✓R

3.2.5

Labour Cost: R1 600 + 37 × R70 ✓MA
= R1 600 + R2 590
= R4 190 ✓CA

Number of boxes = 37 ÷ 2,15 ✓M
= 17,209
≈ 18

Cost for boxes flooring:
18 × R299,90
= R5 398,20 ✓CA

Number of underlay rolls: 37 ÷ 10
= 3,7
= 4

Underlayer: 4 × R56,90
= R227,60 ✓CA

Total cost = R4 190 + R5 398,20+ R227,60 ✓MCA
= R9 815,80 ✓CA

The budget is sufficient. ✓O

QUESTION 2.2: Adapted from NSC 2017 Nov Paper 2

2.2.1

$$\%\text{ increase} = \frac{\text{R70,9 billion} - \text{R54 billion}}{\text{R54 billion}} \times 100\% \quad \checkmark M \checkmark A$$
$$\approx 31{,}296\% \quad \checkmark CA$$

OR

$$\frac{\text{R70,9 billion}}{\text{R54 billion}} \times 100\% = 131{,}2962\% \quad \checkmark M \checkmark A$$
$$\%\text{ increase} = 131{,}2962\% - 100\%$$
$$\approx 31{,}296\% \quad \checkmark CA$$

OR

Using Trial & Error:

$$\text{R54 billion} \times 31{,}3\% = \text{R16,9 billion} \quad \checkmark M \checkmark A$$

$$\text{R16,9 billion} + \text{R54 billion} = \text{R70,9 billion}$$

$$\therefore \%\text{ increase} = 31{,}3\% \quad \checkmark CA$$

2.2.2

$$7 + 118 = 125 \quad \checkmark A$$

$$\frac{7}{125} \times \text{Total budgeted income} = \text{R70,9 billion} \quad \checkmark A$$

$$\text{Total budgeted income} = \text{R70,9 billion} \div \frac{7}{125} \quad \checkmark M$$
$$= \text{R1 266,07 billion}$$
$$\approx \text{R1 266 billion} \quad \checkmark CA$$

OR

$$7 : 118 = \text{R70,9 billion} : x \quad \checkmark A$$
$$7x = \text{R70,9 billion} \times 118 \quad \checkmark S$$
$$x = \frac{\text{R70,9 billion} \times 118}{7}$$
$$\approx \text{R1 195,17 billion} \quad \checkmark CA$$

$$\text{Total budgeted income} = \text{R1 195,17 billion} + \text{R70,9 billion}$$
$$= \text{R1 266,07 billion}$$
$$\approx \text{R1 266 billion} \quad \checkmark CA$$

QUESTION 3:Adapted from NSC 2018 Nov paper 2

3.1.1

33 ✓✓A Kwela Street ✓A

3.1.2

Length 22 mm ✓A (21 mm to 23 mm)
Width 9 mm ✓A (8 mm to 10 mm)

Scale 25 mm ✓A = 30 m (24 mm to 26 mm)

$$\therefore \text{Length} = \frac{30}{25} \times 22\text{ m} \quad \checkmark M$$
$$= 26{,}4\text{ m} \quad \checkmark CA$$

$$\text{Width} = 9 \times \frac{30}{25}\text{ m} = 10{,}8\text{ m} \quad \checkmark CA$$

3.1.3

On the enlarged map:
Measured length = 62 mm ✓MCA (61mm to 64 mm)

Scaled length = 62 mm ✓M ÷ 5 = 12,4 mm ✓CA ≠ 22 mm

∴ NOT valid ✓O

3.2.1

$$\text{Length} = 5\,240\text{ mm} - 2 \times 220\text{ mm} \quad \checkmark MA$$
$$= 4\,800\text{ mm} \quad \checkmark CA$$

$$\text{Width} = 4\,040\text{ mm} - 2 \times 220\text{ mm}$$
$$= 3\,600\text{ mm} \quad \checkmark CA$$

$$\text{Floor area} = 4\,800\text{ mm} \times 3\,600\text{ mm} \quad \checkmark MCA$$
$$= 17\,280\,000\text{ mm}^2$$
$$= 17\,280\,000 \div 1\,000\,000 \quad \checkmark C$$
$$= 17{,}28\text{ m}^2 \quad \checkmark CA$$

3.2.2

$$\text{Area of Ceiling board} = 2\,400\text{ mm} \times 900\text{ mm} \quad \checkmark SF$$
$$= 2\,160\,000\text{ mm}^2 \quad \checkmark A$$

$$\text{Number of boards needed} = \frac{17\,280\,000}{2\,160\,000} \quad \checkmark M$$
$$= 8 \quad \checkmark CA$$

∴ Need more than 7 ✓O

3.2.3

$$\text{Length of cornice} = 2 \times (4\,800\text{ mm} + 3\,600\text{ mm}) \quad \checkmark CA \checkmark SF$$
$$= 16\,800\text{ mm} \quad \checkmark CA$$

3.2.4	$16\,800 \div 2\,000 = 8{,}4$ ✓CA Hence 9 lengths cornice needed. Total cost = $8 \times$ R91,44 ✓A + $9 \times$ R53,64 ✓M = R731,52 + R482,76 = R1 214,28 ✓CA The statement is correct. ✓O	3.3.2	$8\,000\ \ell = 8\,000\,000\ cm^3$ $= 8\ m^3$ ✓C Volume of a cylindrical tank = $\pi \times radius^2 \times length$ $8\ m^3 = 3{,}142 \times radius^2 \times 2{,}9\ m$ ✓SF $(radius)^2 = \frac{8\ m^3}{3{,}142 \times 2{,}9\ m}$ ✓A $= 0{,}87798239...$ ✓S $Radius = \sqrt{0{,}87798239}$ $\approx 0{,}937\ m$ ✓CA Diameter = 1,874 m ✓CA
3.3.1	Above ground is a higher security risk ✓✓O OR Safety reasons ✓✓O OR Below the ground the cost will be less. ✓✓O		

QUESTION 4.2: Adapted from NSC 2019 May Paper 2			
4.2.1	104 : 88 ✓RT ✓A = 13 : 11 ✓S	4.2.3	$P_{(elects)} = \frac{58}{368}$ ✓RT $P_{(NOT)} = 1 - \frac{58}{368}$ $= \frac{310}{368} \times 100\%$ ✓A ✓M $\approx 84\%$ ✓CA
4.2.2	$\frac{203}{1724}$ ✓RT ✓RT = 0,11774942 ≈ 0,12 ✓CA		

CONCLUSION

This is the end of the e-SSIP exam kit and hopefully, it would be informative. You have been provided with the exam tips, practice questions and exam type questions on how to approach end of the year examination paper.

REFERENCES USED

1. 2017 – 2019 NSC Paper 1 and 2 Nov Question papers
2. 2017 – 2019 NSC Paper 1 and 2 June Question papers
3. 2019 Prelim Paper 1 and 2 Question Papers from 9 Provinces
4. 2018 NSC Paper 1 and 2 March Question papers
5. 2019 NSC Paper 1 and 2 June Question papers
6. 2018 – 2019 ESSIP Participant Guide
7. Mathematical Literacy CAPS
8. 2017 – 19 Examination Guidelines

END OF THE EXAM KIT