Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2022

MATHEMATICAL LITERACY P1

MARKS: **100**

TIME: **2 hours**

This question paper consists of 12 pages, including two answer sheets.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.

2. 2.1 Use ANSWER SHEET 1 for QUESTION 4.1.3.

   2.2 Use ANSWER SHEET 2 for QUESTIONS 4.3.1.

   2.3 Write your NAME and GRADE in the spaces provided on ANSWER SHEET 1 for QUESTION 4.1.3 AND on ANSWER SHEET 2 for QUESTION 4.3.1. Hand in the ANSWER SHEETS with your ANSWER BOOK.

3. Number the answers correctly according to the numbering system used in this question paper.

4. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.

5. Round off ALL final answers according to the context used, unless stated otherwise.

6. Indicate units of measurement, where applicable.

7. Start EACH question on a NEW page.

8. Show ALL calculations clearly.

9. Write neatly and legibly.

QUESTION 1

1.1 Study Ms Jane Bukirwa's payslip for the month of October 2021 shown below and answer the questions that follow.

GM's Car Washing Co. Ltd.
8 Down Street,
Komani,
5319
Tel: _____
Cellphone no.: _____

[www.yorkshire.co.uk]

Payslip for the month of October 2021

Employee's name: Jane Bukirwa		Paid days: 30	
Gender: Female		Leave without pay: 1	
Occupation: Clerk/Cashier		Pay slip no.: 10/2021	
Earnings	**Amount**	**Deductions**	**Amount**
Basic salary	R5 000	Salary advance	R650
Overtime hours	45	PAYE	R774
Overtime rate	R25	UIF: 1% of Total Earnings	R61,25
Overtime payment	R1 125	Other deductions	-
Total Payment	**R6 125**	**Total deductions**	----
Net Pay	**R4 639,75**		

1.1.1 Write down Ms Jane Bukirwa's occupation. (2)

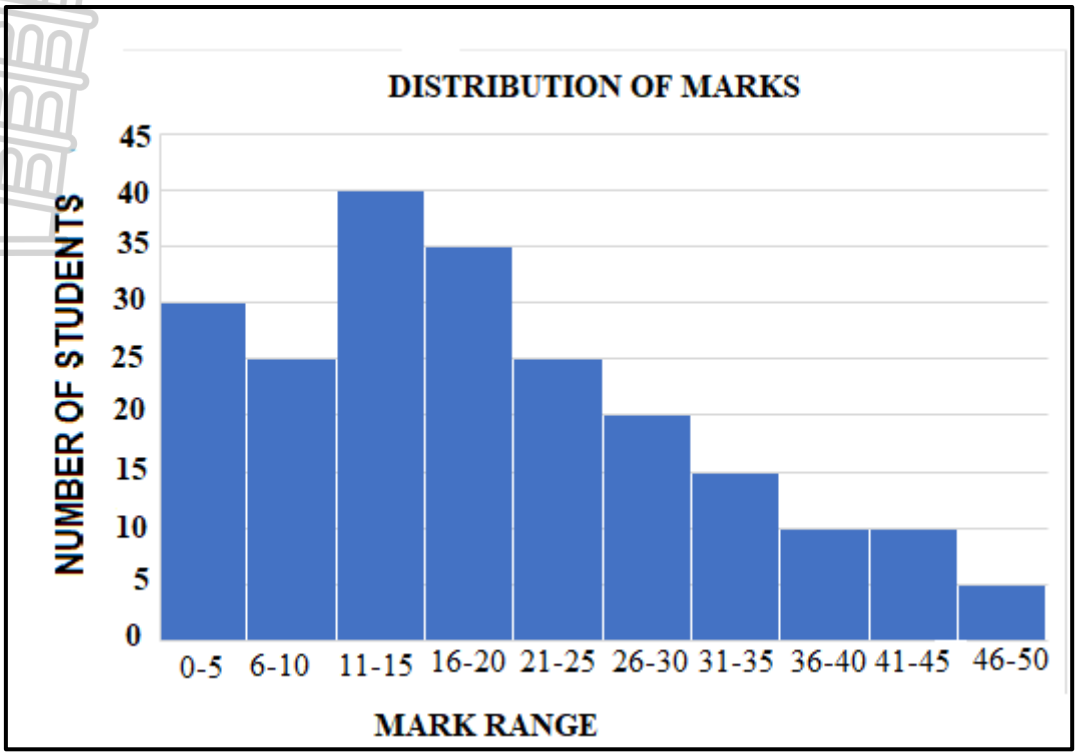
1.1.2 Calculate her total deductions. (2)

1.1.3 Show by means of calculations how the overtime payment amount of R1 125 was determined. (2)

1.1.4 Define the term '*net pay*' according to the above context. (2)

1.1.5 Calculate the amount to be added to Jane Bukirwa's basic salary, if the basic salary is increased by 7,5% for November 2021. (3)

1.2 Grade 11 Mathematical Literacy learners wrote a test marked out 50 marks. Their results are displayed on the graph below showing the distribution of marks.



Use the information displayed on the above graph to answer the questions that follow.

1.2.1 Name the type of graph used to display the data of results. (2)

1.2.2 Determine the number of learners that wrote the test. (2)

1.2.3 How many learners scored within the modal class? (2)

1.2.4 Calculate the marks out of 50 for a learner that obtained 68% in the test. (2)

[19]

QUESTION 2

2.1 Aunt Louis, an educator, compares the pension fund estimations for the year 2021 and 2022. She wants to resign at the end of 2022. Study the information below and answer the questions that follows.

Normal retirement estimated	2022	2021
Monthly pension (annuity) payable	R26 383	R25 591
Lump sum (gratuity) payable	R919 363	R884 198
Discharge monthly pension payable	R23 248	R22 083
Discharge lump sum (gratuity) payable	R799 313	R747 619
Monthly pension (annuity) payable to spouse(s)	R13 692	R13 295
Lump sum (gratuity) payable to beneficiaries	R2 592 409	R2 470 783
Resignation benefit	R2 836 836	----------

[Adapted from www.gepf.co.za]

2.1.1 Write down the value of the lump sum payable to beneficiaries in 2021. (2)

2.1.2 The resignation benefit for the year 2021 is R166 417 less than 2022 benefit. Calculate the resignation amount for the year 2021. (3)

2.1.3 Calculate the annual amount for the year 2022 that Aunt Louis will receive for the monthly pension. Round off your answer to the nearest R100. (3)

2.1.4 Aunt Louis claimed that the lump sum (gratuity) payable for 2022 is R35 615 more than the lump sum (gratuity) payable for 2021. Verify the statement. (3)

2.1.5 Give ONE advantage of an employee contributing towards the Pension Fund. (2)

2.2 John Matu sells Samsung cellphones. The price list given below shows the cost price and profit for different types of cellphones in the year 2021. Study the price list and answer the questions that follow. **All prices include VAT 15%.**

Samsung Galaxy A31 Cost Price: R3 299,25 Profit: R1 099,75 	**Samsung Galaxy A72** Cost Price: R7 499,25 Profit: R2 499,75 
Samsung Galaxy S10 Cost Price: R11 099,25 Profit: R3 699,75 	**Samsung Galaxy S21 Ultra** Cost Price: R21 749,25 Profit: R7 249,75 

[Source: www.samsung.com]

2.2.1 Determine the selling price of the Samsung Galaxy A72. (2)

2.2.2 Determine the ratio (in simplest form) of total profit to the total income from sale of the four cellphones. (4)

2.2.3 John Matu ran out of the cheaper phones. He placed an order for the cellphones A31 and A72 in the ratio: A31 : A72 = 2 : 1.
A total of 15 cellphones were ordered.
Verify with the necessary calculations that the total cost price for the order was R70 488,75. (5)

2.2.4 The cost price of Samsung A31 in the year 2020 was R3 399,75. It is costing less this year due to new cellphones on the market.
Calculate the percentage decrease on the cost of the A31. Give your answer to the nearest percentage.
You may use the following formula:

$$\textbf{Percentage decrease} = \frac{\textbf{new price} - \textbf{old price}}{\textbf{old price}} \times \mathbf{100\%}$$ (4)

2.3 Mr John Matu received the statement indicating water tariffs for the month of March 2021. Study the water tariffs table below from DJB Municipality.

DJB Municipality Mr J. Matu: March 2021 statement	
Code	**Water tariffs (per kℓ) (Excluding VAT)**
WA0101	6,110 kℓ @ R16,992900
WA0102	4,073 kℓ @ R17,326130
WA0103	2,817 kℓ @ R24,06370
Amount paid	**R ---**

Use the information and the table above to answer the following question.

Mr J. Matu asked his two sons to calculate the amount (including VAT = 15%) he has to pay.

- Son A got R263,48
- Son B got R258,48

John claimed Son B was correct. Verify showing ALL your calculations whether the statement is correct. (5)
[33]

QUESTION 3

Motor trade sales in the months (January–December) for the years 2018 and 2019 at current prices then, are shown in the TABLE 1 below.

TABLE 1: MOTOR TRADE SALES AT CURRENT PRICES THEN (RAND IN MILLION)

Month	Year 2018	Year 2019
January	53 044	53 844
February	53 321	52 361
March	58 353	55 646
April	49 633	54 981
May	56 064	56 846
June	55 263	54 249
July	56 409	59 270
August	57 598	58 435
September	54 436	54 467
October	60 406	59 960
November	60 417	57 915
December	51 480	52 718
Total	**666 424**	**670 692**

[Source: www.statssa.gov.za/Jan2020]

Use the information above to answer the following questions.

3.1 Write down the month and the year when trade sales were the lowest of the two years. (2)

3.2 Determine the range for the amount of trade sales for the months in the year 2019. (3)

3.3 Write down the total amount of the trade sales for the year 2018 in words. (2)

3.4 Calculate the mean trade sales for the year 2018. (3)

3.5 Determine the median value of the trade sales for the months (Jan–Dec) in the year 2019. (3)

3.6 Express the amount of trade sales of October 2018 as a percentage of the total trade sales for the year 2018. (3)

3.7 Determine the probability (as a fraction) of randomly selecting a month that shows a decline in the amount of trade sales from year 2018 to 2019. (3)

[19]

QUESTION 4

4.1 Ms Jena started a shoe repair business to repair old shoes, restore their quality and make them user friendly.
Below are the weekly costs and charg involved:

- Rent for the room – R250
- Salaries – R400
- Materials required per pair of shoes on average costed at R25
- On average each customer is charged R75 per pair of shoes
- **Income = R75 × n**, (where n represents the number of pairs of shoes)
- **Expenses = R650 + R25 × n,** (where **n** represents the number of pairs of shoes)

[Source: https://howtostatanllc.com/Shoe repair]

Use the above information to answer the following questions.

4.1.1 Write down the weekly total fixed costs that Ms Jena pays per week. (2)

4.1.2 The TABLE 2 below shows the income and expenses from the business.

TABLE 2: INCOME AND EXPENSES FOR THE SHOE REPAIR BUSINESS

Number of pair of shoes (n)	0	5	10	15	18	20
Expenses (R)	650	775	900	1 025	1 100	**A**
Income (R)	0	375	750	1 125	1 350	1 500

(a) Calculate missing value **A.** (2)

(b) Ms Jena has learnt that starting a business is not easy. It takes time to get your business known. Her records show that:

- In week 1 – She repaired 5 pairs of shoes
- In week 2 – She repaired 10 pairs of shoes
- In week 3 – She repaired 20 pairs of shoes

Use the information above and TABLE 2 to show by means of calculations that Ms Jena made a loss of R200 in the 3 weeks. (5)

4.1.3 A line graph showing the income from the repair of shoes has been drawn on ANSWER SHEET 1. Use the same grid on ANSWER SHEET 1 to draw another line graph showing the expenses of the repair of shoes. (3)

4.1.4 Use the graph to determine the number of pair of shoes at the break-even point. (2)

4.2 Ms Jane's brother who lives in Japan sent her money to assist her in her business. He sent Japanese yen (¥) 25 000. Determine the amount in Rands Ms Jane received.

You may use the exchange rate at the time: 1Yen (¥) = R0,135 2364 (3)

4.3 A Grade 11B Mathematical Literacy class at Nayani Secondary School participated in a research project where their gender and weight (kg) were recorded.
The raw data is indicated in TABLE 3 below:

TABLE 3: GENDER AND WEIGHTS FOR GRADE 11B

Gender	**Weights in kg**												
Female	58	67	73	68	80	65	90	78	108	59	67	79	75
Male	61	57	70	72	66	81	93	77	79	83	75	82	

Use the above information to answer the following questions.

4.3.1 Complete the frequency table that the teacher left incomplete. Use ANSWER SHEET 2.

Weight Category	**Female**		**Male**	
	Tally	Frequency	Tally	Frequency
50–59	//	2	/	1
60–69	////	4		
70–79	////	4		
80–89	/	1		
90–99	/	1		
100–109	/	1		

(5)

Use the above information in TABLE 3 and your completed ANSWER SHEET 2 to answer the questions that follow.

4.3.2 In which category do most of the females fall? (2)

4.3.3 Calculate the number of males who weighs 70 kilograms (kg) or more but less than 90 kg. (2)

4.3.4 Determine the probability (as a percentage) of randomly selecting a learner weighing 70 kg or more from the class. (3)

[29]

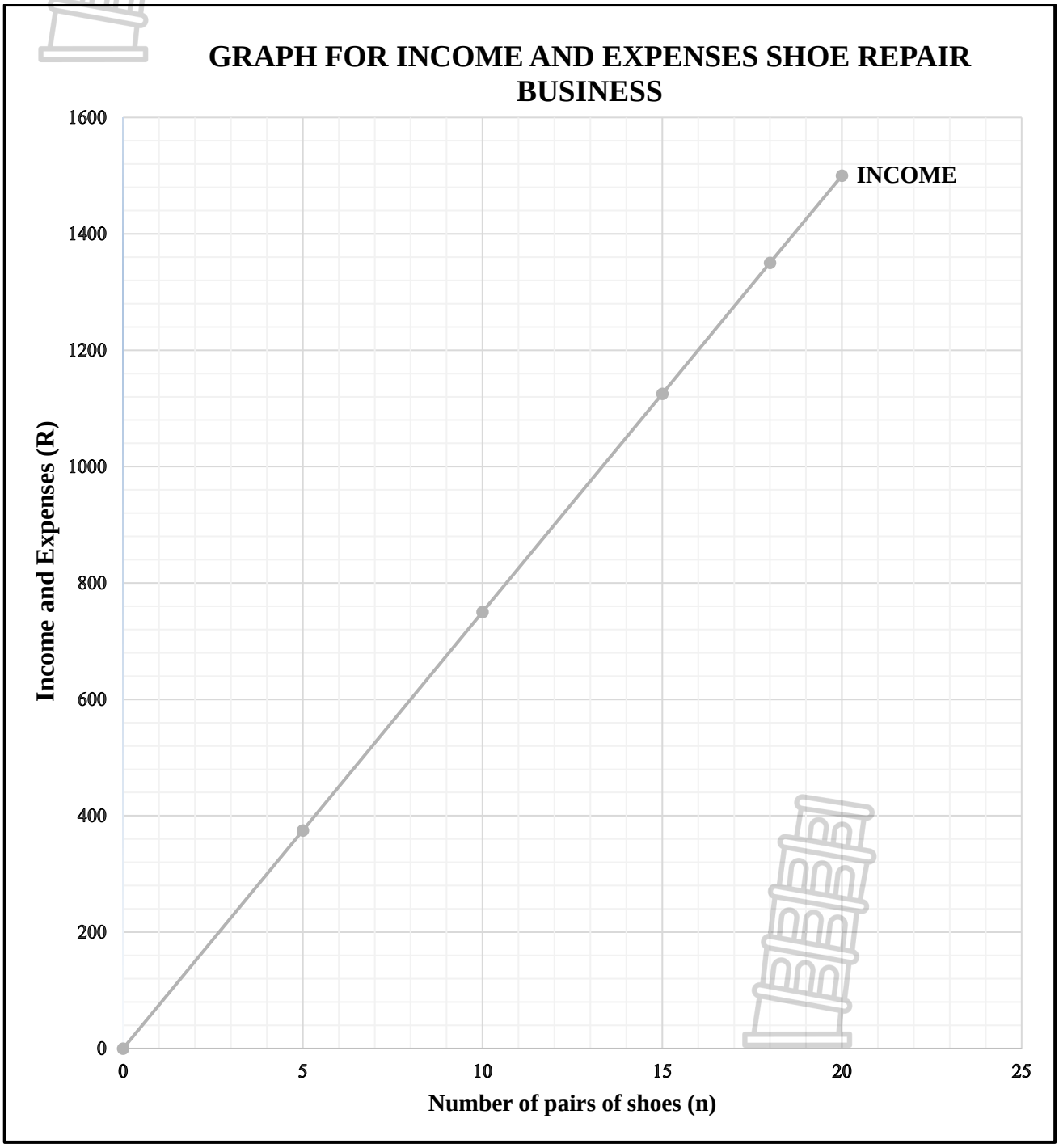
TOTAL: 100

ANSWER SHEET 1

QUESTION 4.1.3

NAME OF SCHOOL: _____ **GR 11: _____**

NAME OF LEARNER: _____



ANSWER SHEET 2

QUESTION 4.3.1

NAME OF SCHOOL: _____ GR 11: _____

NAME OF LEARNER: _____

Complete the frequency table that the teacher left incomplete:
Use the table in the ANSWER SHEET 2.

Weight Category	**Female**		**Male**	
	Tally	Frequency	Tally	Frequency
50–59	//	2	//	2
60–69	////	4		
70–79	////	4		
80–89	/	1		
90–99	/	1		
100–109	/	1		

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MATHEMATICAL LITERACY P1 MARKING GUIDELINE

MARKS: 100

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
MCA	Method with consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RM	Reading from a table/Reading from a graph/Read from a map
F	Choosing the correct formula
SF	Substitution in a formula
J	Justification
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding Off/Reason
AO	Answer only
NPR	No penalty for rounding

This marking guideline consists of 7 pages.

QUESTION 1: FINANCE AND DATA HANDLING [19]			
Ques	**Solution**	**Explanation**	**T&L**
1.1.1	Clerk/Cashier ✓✓ RT	2RT correct occupation (2)	F L1
1.1.2	Total deductions = R650 + R774 + R61,25 ✓ M = R1 485,25 ✓ A **OR** Total deductions = R6 125–R4 639,75 ✓ M = R1 485,25 ✓ A	1M adding the deductions 1A answer 1M subtracting 1A answer (2)	F L1
1.1.3	Overtime = R25 × 45 ✓ RG ✓ M = R1 125	1RG values R25 and 45 1M multiplication (2)	F L1
1.1.4	Net pay is the amount received by employee after subtracting total deductions ✓ from gross income ✓J	2J explanation (2)	F L1
1.1.5	Increase = $\frac{7,5}{100} \times 5\,000$ ✓ MA ✓M = R375 ✓A	1MA percentage of 7,5% 1M multiplication with R5 000 1A answer (3)	F L1
1.2.1	Histogram ✓✓ RT	2RT correct answer (2)	D L1
1.2.2	✓M Total = 30 + 25 + 40 + 35 + 25 + 20 + 15 + 10 + 10 + 5 = 215 ✓CA	1M addition 1CA answer (2)	D L1
1.2.3	40 ✓✓ RG	2RG answer (2)	
1.2.4	$\frac{68}{100} \times 50 = 34$ marks ✓M✓ A	1M multiplication with % with 50 1A answer (2)	D L1
		[19]	

QUESTION 2: FINANCE [33]			
Ques.	**Solution**	**Explanation**	**T&L**
2.1.1	R2 470 783 ✓✓ RT	2RT correct lump sum payable to beneficiaries (2)	F L1
2.1.2	✓RT R2 836 836 – R166 417 ✓ M = R2 670 419 ✓CA	1RT correct value for 2022 1M subtraction R166 417 from the value of 2022 1CA correct answer (3)	F L1
2.1.3	2022 Annual amount = R26 383 × 12 ✓ M = R316 596 ✓ S = R316 600 ✓ R	1M multiplying the correct value by 12 1S simplification 1R correct rounding (3)	F L2
2.1.4	Difference in lump sums for 2022 and 2021 = R919 363 – R884 198 ✓ RT = R35 165 ✓ CA R35 165 is not more than R35 615 statement is invalid. ✓ J	1RT and subtracting correct values R919 363 and R884 198 1CA simplification 1J justification. (3)	F L4
2.1.5	Advantage: It is a saving for the future ✓✓ J One gets income after retiring Beneficiaries get some income when the breadwinner has passed on. **Choose ONE or ANY relevant answer.**	2J any correct reason given (2)	F L4
2.2.1	Selling price for Samsung Galaxy A72 = R7 499,25 + R2 497,75 ✓M = R9 999,00 ✓A	1M addition 1A answer (2)	F L1
2.2.2	Total profit = R1 099,75 + R2 499,75 + R3 699,75 + R7 249,75 ✓M = R14 549,00 Total income = (3 299,25 + 1099,75 + 7499,25 + 2499,75 + 11099,25 + 3699,75 + 21749,25+7249,75) = R58 196,00 ✓M Ratio of total profit : total income = R14 549,00 : R58 196,00 ✓M = 1 : 4 ✓CA	1M adding the total costs 1M adding the profits 1M forming ratio 1CA reduced to simplest ratio form (4)	F L3
2.2.3	A31 cellphones ordered = $\frac{2}{3}$ × 15 = 10 ✓A A72 cellphones ordered = $\frac{1}{3}$ ×15 = 5 ✓A Cost price of A31: 10 × R3 299,25 = R32 992,50 ✓MCA Cost price of A72: 5 × R7 499,25 = R37 496,25 ✓MCA ✓MCA Total cost price of the order = R32 992,50 + R37 496,25 = R70 488,75	1A for number of A31 phone ordered 1A for number of A72 phone ordered. 1MCA cost price for A31 1MCA cost price for A72 1MCA addition (5)	F L4

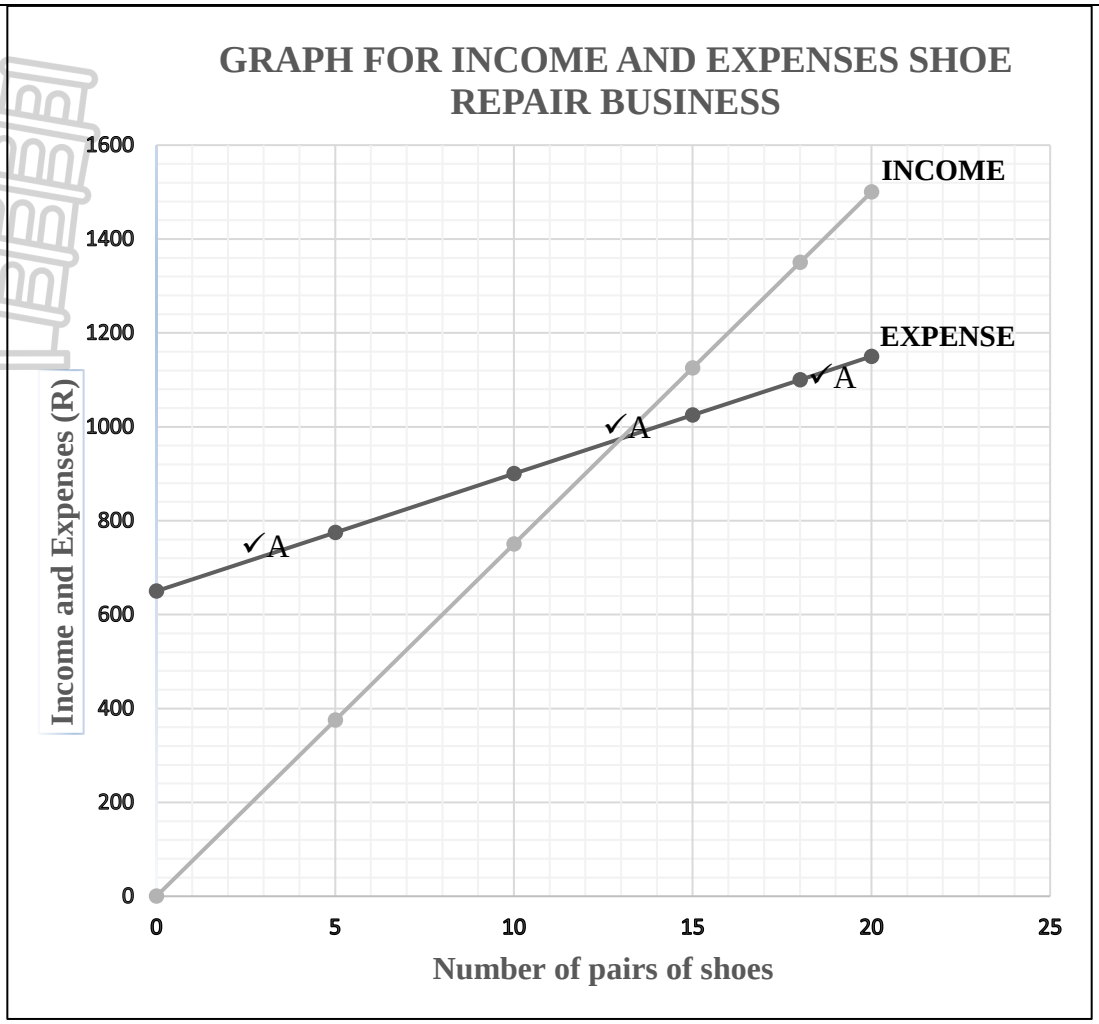
Ques	Solution	Explanation	T&L
2.2.4	Percentage decrease $= \frac{\text{R3 299,25} - \text{R3 399,75}}{\text{R3 399,75}} \times 100\%$ ✓SF ✓SF = -2,96% ✓S = 3,0% ✓R	1SF substituting the numerator values 1SF substituting denominator value 1S simplification 1R rounding **(NPR for negative answer)** (4)	F L3
2.3	Amount charged : 6,110 × R16,992900 = 103,826619 : 4,073 × R17,326130 = 70,56932749 : 2,817 × R24,06370 = 67,7874429 } ✓M Total: R242,18 ✓ S Amount charged including VAT: R242,18 × 1,15 ✓ M = R278,51 ✓CA INVALID statement ✓ J	1M multiplying by the rate 1S simplification 1M VAT calculation 1CA simplification 1J justification (5)	F L4
		[33]	

QUESTION 3: DATA HANDLING AND PROBABILITY [19]

Ques.	Solution	Explanation	T&L
3.1	April 2018 ✓✓ RT	1RT for the month 1RT for the year correct (2)	D L1
3.2	✓ RT Range = R59 960 – R52 361 ✓ M = R7 599 million ✓CA	1RT identifying the values 1M subtraction 1CA answer (3)	D L2
3.3	✓ A Six hundred and sixty-six billion, four hundred and twenty-four million ✓ A	1A value of billions 1A value of millions (2)	D L1
3.4	Mean sales in millions = $\frac{666\,424\,000}{12}$ ✓ RT ✓M = R55 535 333,33 ✓A	1RT value of the numerator 1M dividing by 12 1A correct answer (3)	D L2
3.5	Descending order: 59 960; 59 270; 58 435; 57 915; 56 846; **55 646**; **54 981**; 54 467; 54 249; 53 844; 52 718; 52 361 ✓M Median in millions = $\frac{55\,646 + 54\,981}{2}$ ✓M = R55 313,50 ✓CA	1M arranging in descending/ascending order 1M concept of median. 1CA answer (3)	D L3

3.6	Annual % increase rate on monthly premium $= \frac{60\,406}{666\,424} \times 100\%$ ✓RT ✓ M = 9,06 % ✓ CA	1RT correct values 1M calculation of percentage. 1CA answer **(NPR)** (3)	D L2
3.7	P (month with decline from 2018 to 2019) = $\frac{5}{12}$ ✓✓A ✓A	2A identifying the number of 5 months 1A answer denominator (3)	P L3
		[19]	

QUESTION 4: DATA HANDLING [29 MARKS]			
Ques.	**Solution**	**Explanation**	**T&L**
4.1.1	R650 ✓✓ RT **OR** Fixed cost = R250 + 400 ✓ RT = R650 ✓ A	2RT value from expenses formula **OR** 1RT for adding both values 1A answer (2)	F L1
4.1.2 (a)	**A** = R650 + R25 × 20 = R1 150 ✓ A ✓ SF	1SF substitution in expenses formula 1A simplification and answer (2)	F L2
4.1.2 (b)	Total expenses = R775 + R900 + R1 150 ✓ MCA = R2 825 ✓ S ✓M Total Income = R375 + R750 + R1 500 = R2 625 ✓ S Expenses – Income = R2 825 – R2 625 ✓ MCA = R200	**1MCA adding the expenses with CA from 4.1.2** 1S simplification 1M adding income values 1S simplification IMCA subtracting the two values that give the loss of R200 (5)	F L4

4.1.3	 Starting point (0;650) ✓A Any other correctly plotted point ✓ A Joining points with a straight line ✓A (3)		F L2
4.1.4	Number of pair of shoes = 13 at break-even point ✓✓RT	2RT value of 13 from graph (2)	F L2
4.2	1 Japanese yen (¥) = R0,1352364 (¥) 25 000 = R? Amount received = 25 000 × R0,1352364 ✓✓MA = R3 380,91 ✓A	2MA multiplication of the two values 1A answer (**Accept R3 380,90)** (3)	F L2

<table>
<tr>
<td>4.3.1</td>
<td>
<table>
<tr><th rowspan="2">Weight Category</th><th colspan="2">Female</th><th colspan="2">Male</th></tr>
<tr><th>Tally</th><th>Frequency</th><th>Tally</th><th>Frequency</th></tr>
<tr><td>50–59</td><td>//</td><td>2</td><td>/</td><td>1</td></tr>
<tr><td>60–69</td><td>////</td><td>4</td><td>//</td><td>2 ✓A</td></tr>
<tr><td>70–79</td><td>////</td><td>4</td><td>𝍸</td><td>5 ✓A</td></tr>
<tr><td>80–89</td><td>/</td><td>1</td><td>///</td><td>3 ✓A</td></tr>
<tr><td>90–99</td><td>/</td><td>1</td><td>/</td><td>1 ✓A</td></tr>
<tr><td>100–109</td><td>/</td><td>1</td><td>0</td><td>0 ✓A</td></tr>
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<td>1A tally and frequency for each row of males
(5)</td>
<td>D
L2</td>
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<tr>
<td>4.3.2</td>
<td>60–69 ✓RT
70–70 ✓RT</td>
<td>1RT for correct category
1RT for correct category
(2)</td>
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L2</td>
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<tr>
<td>4.3.3</td>
<td>5 + 3 = 8
✓✓RT</td>
<td>2RT for the correct answer of 8
(2)</td>
<td>D
L3</td>
</tr>
<tr>
<td>4.3.4</td>
<td>✓RT
P(more than 70 kg) = $\frac{16}{25} \times 100\%$ ✓M
= 64% ✓A</td>
<td>1RT for the correct value of numerator and denominator
1M percentage calculation
1A answer (3)</td>
<td>P
L3</td>
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<tr><td></td><td></td><td>[29]</td><td></td></tr>
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