education

Department of Education
FREE STATE PROVINCE

MID-YEAR EXAMINATION

GRADE 11

MATHEMATICAL LITERACY P1

JUNE 2024

MARKS: 75

TIME: 1 HOURS

This question paper consists of 09 pages including 01 answer sheet.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Answer QUESTION 4.1.2 on the attached ANSWER SHEET.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Start EACH question on a NEW page.
5. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
6. Show ALL calculations clearly.
7. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
8. Indicate units of measurement, where applicable.
9. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly.

QUESTION 1

1.1 In TABLE 1 below is a list of explanations and definitions of concepts used in Mathematical Literacy.

TABLE 1: EXPLANATIONS AND DEFINITIONS OF CONCEPTS

A.	A fixed payment, typically paid monthly by an employer to employee.
B.	A tool used in probability to calculate possible outcomes.
C.	Fees for services the bank provide to the clients.
D.	Is an abbreviation of the insurance fund aimed at temporary financial support for persons who is laid-off from work.
E.	The way things turn out.
F.	Money spent on something.

Use the information above to write down the letter of the explanation or definition (A to E) of EACH of the following concepts:

1.1.1 Bank charges (2)

1.1.2 UIF (2)

1.1.3 Expenditure. (2)

1.1.4 Tree diagram (2)

1.2 Mosala's daughter joined her school's hockey team in 2022.

TABLE 2 below shows the school sport uniform she would need as well as the percentage (%) change in the price compared to the previous year.

TABLE 2: PRICES OF SCHOOL SPORT UNIFORM WITH PERCENTAGE (%) CHANGE IN PRICE

ITEM	2021 PRICE	2022 PRICE	% CHANGE IN PRICE
Sport shirt	R267,92	R265,00	– 1,1
Sport shorts	R214,17	R177,00	– 17,4
Sport skirt	R248,70	R232,00	– 6,7
Tracksuit top	R267,78	R382,00	42,7
Tracksuit pants	R87,75	R195,00	122,2
Sport socks	R48,58	R53,50	10,1
Cap	R89,95	R171,00	90,1

[Adapted from www.news24.com/fin24/money/education]

Use TABLE 2 to answer the questions that follow.

1.2.1 Arrange (in descending order) the % change in price. (2)

1.2.2 Identify the most expensive item in 2021. (2)

1.2.3 Calculate the difference in the price of a cap bought in 2022 compared to 2021. (2)

[14]

QUESTION 2

2.1 Mr Venter is working in Germany as a teacher.

He decided to visit his family in South Africa for 12 days and 11 nights in June 2023. Mr Venter made a list of all the expenses needed to go on this trip.

TABLE 3: BUDGET FOR ALL THE EXPENSES TO VISIT SOUTH AFRICA

Expenses	**Cost**
Plane ticket	€1 003 (Return trip)
Car hire and petrol	€23,52 per day
Accommodation	€31,69 per night
Meals	€22,39 per day
Spending money	€500 for 12 days

Source:*www.cheapflight.co.za*

Use the information above to answer the questions that follow.

2.1.1 Define the term *budget* in the given context. (2)

2.1.2. Calculate the total amount Mr Venter is budgeting for the trip to South Africa. (5)

2.1.3 Calculate the total budget amount he will spend in Rands if €1 : R20,10. (2)

2.1.4 Determine if Mr Venter would have enough money for the trip if he invested €2 200 for 2 years at ABC Bank in Germany at an interest rate of 6% compounded annually. (6)

2.2 Mr Venter booked a flat in Johannesburg where he had to pay for the electricity he uses during his stay.

TABLE 4: ELECTRICITY RATES FOR JOHANNESBURG DURING JUNE 2023.

Tariff blocks (usage intervals)				**R/kWh (VAT inclusive)**
Block 1	0	–	100 kWh	R2,0970
Block 2	101	–	400 kWh	R2,4541
Block 3	401	–	650 kWh	R2,6738
Block 4	usage above		650 kWh	R2,8824

Source:*www.nersa.org.za*

Use the information above to answer the questions that follow.

2.2.1 What does the acronym *VAT* stand for? (2)

2.2.2 Determine the maximum kWh charged in **Block 2.** (2)

2.2.3 Calculate the total amount he will pay if he uses 412 kWh electricity during his stay. (5)

2.2.4 Determine the probability (as a percentage), that Mr Venter will be in South Africa during winter season. (2)
[26]

QUESTION 3

The Mokoena family travelled daily for 10 days between Johannesburg and Pretoria. Every day their son counted the number of TOYOTA and VOLKSWAGEN vehicles they passed on the road.

TABLE 5: The number of TOYOTA and VOLKSWAGEN vehicles counted per day.

TOYOTA	20	24	25	29	33	36	36	43	46	58
VOLKSWAGEN	22	41	30	16	10	24	30	19	27	21

Use the above information to answer the questions that follow.

3.1 State whether the number of vehicles counted per day represent discrete or continuous data. Explain your answer. (2)

3.2 Write down the data collection method the Mokoena's son used to collect the data. (2)

3.3 Arrange the number of VOLKSWAGEN counted daily in ascending order. (2)

3.4 Use the data collected on TOYOTA and determine the median. (3)

3.5 The Mokoena's son stated that he saw on average 15 more TOYOTA than VOLKSWAGEN vehicles. Show with calculations whether the son's statement is correct. (6)

[15]

QUESTION 4

4.1 LUCKY PRINTING EASY business produce advertising brochures.

Its business finances are as follows:

- Pays R1 000 monthly for the hire of the printing machine.
- The cost of printing one brochure is R10.
- Lucky charges her customers R20 per brochure.

LUCKY PRINTING EASY's monthly expenses and income.				
Number of brochures printed in a month	0	100	**B**	200
Total expenses (in rand)	1 000	2 000	2 500	3 000
Total income (in rand)	0	**A**	3 000	4 000

Use the above information to answer the questions that follow.

4.1.1 Write down the formula used by LUCKY PRINTING EASY to calculate the business monthly total expenses. (2)

4.1.2 Calculate the values of **A** and **B** in die tabel. (3)

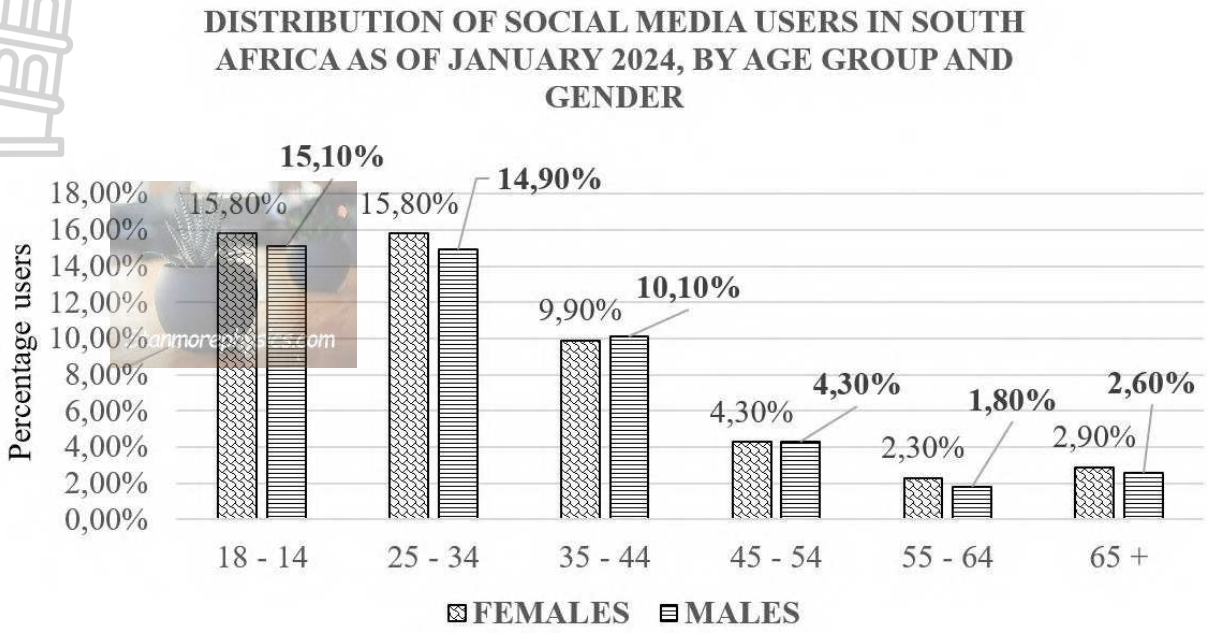
4.1.3 Use the ANSWERSHEET appearing on the last page to draw a graph of LUCKY PRINTING EASY's monthly income. (3)

4.1.4 Suppose LUCKY PRINTING EASY in one month prints 160 brochures and sells all of them. Calculate the profit she made in that month.

Use the formula:

Profit = Income – Expenses (4)

4.2 Below is a graph showing the distribution of social media users in the Republic of South Africa as of January 2024, by age group and gender.



Source: https://www.statista.com/

Use the information above to answer the questions that follow.

4.2.1 Determine the age group where the difference between female and male users of social media usage is zero. (2)

4.2.2 Give responses in terms of **(a)** and **(b)** below:

(a) **Comment** (that is, give a numerical observations) about females and males users of social media in the age group of 25 to 34 years. (2)

(b) **How do the numbers compare** for females and males in the age group of 25 to 34 years? (2)

4.2.3 Describe the trend in the use of social media by females and males over the age groups as observed in the graph. (2)
[20]

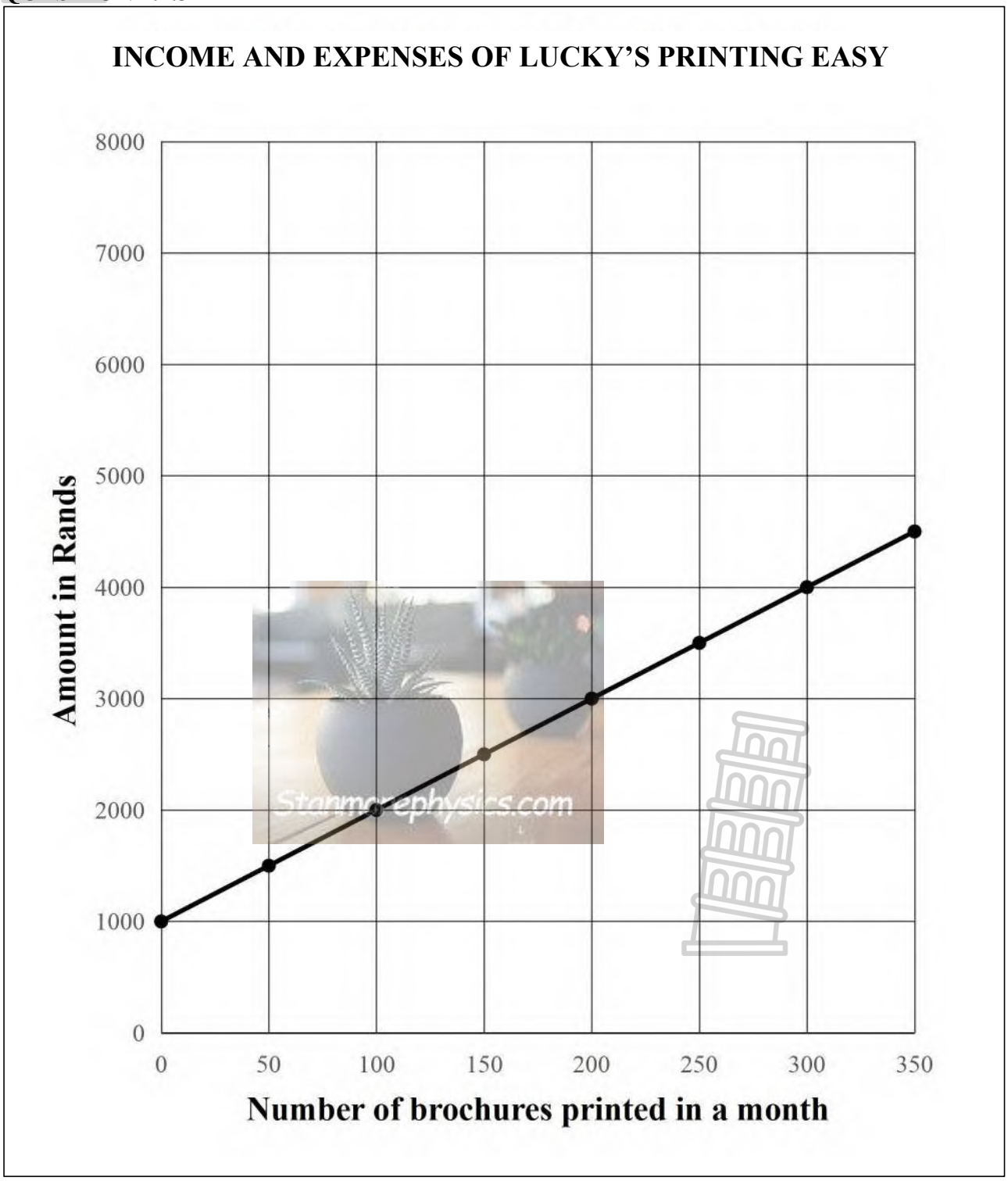
TOTAL: 75

ANSWER SHEET

SURNAME: _____

NAMES / INITIALS: _____

QUESTION 4.1.3



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JUNE EXAM

GRADE 11

MATHEMATICAL LITERACY P1/
WISKUNDIGE GELETTERDHEID V1

JUNE 2024

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 75

SYMBOL/*KODE*	EXPLANATION/*VERDUIDELIKING*
M	Method/*Metode*
MA	Method with accuracy/*Metode met akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/graph/map/diagram/*Lees vanaf tabel/kaart/grafiek/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in formule*
O	Opinion/Explanation/Reasoning /*Opinie/Verduideliking/Redenasie*
P	Penalty, e.g. for no units, incorrect rounding off, etc./*Penalisering, bv. vir geen eenhede/verkeerde afronding, ens.*
R	Rounding off/*Afronding*
NPR	No penalty for rounding/*Geen penalisering vir afronding nie*
AO	Answer only/*Slegs antwoord*
MCA	Method with constant accuracy/*Metode met volgehoue akkuraatheid*

These marking guidelines consist of 7 pages.
Hierdie nasienriglyne bestaan uit 7 blads

NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution, mark the crossed out (cancelled) version.
- Consistent accuracy (CA) applies in ALL aspects of the marking guidelines; however it stops at the second calculation error.
- Note: consistent accuracy (CA) does not apply in cases of a breakdown.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.

As a general marking principle, if a candidate has incurred one mistake and there is evidence of sound mathematics thereafter, then that candidate should lose one mark only

LET WEL:

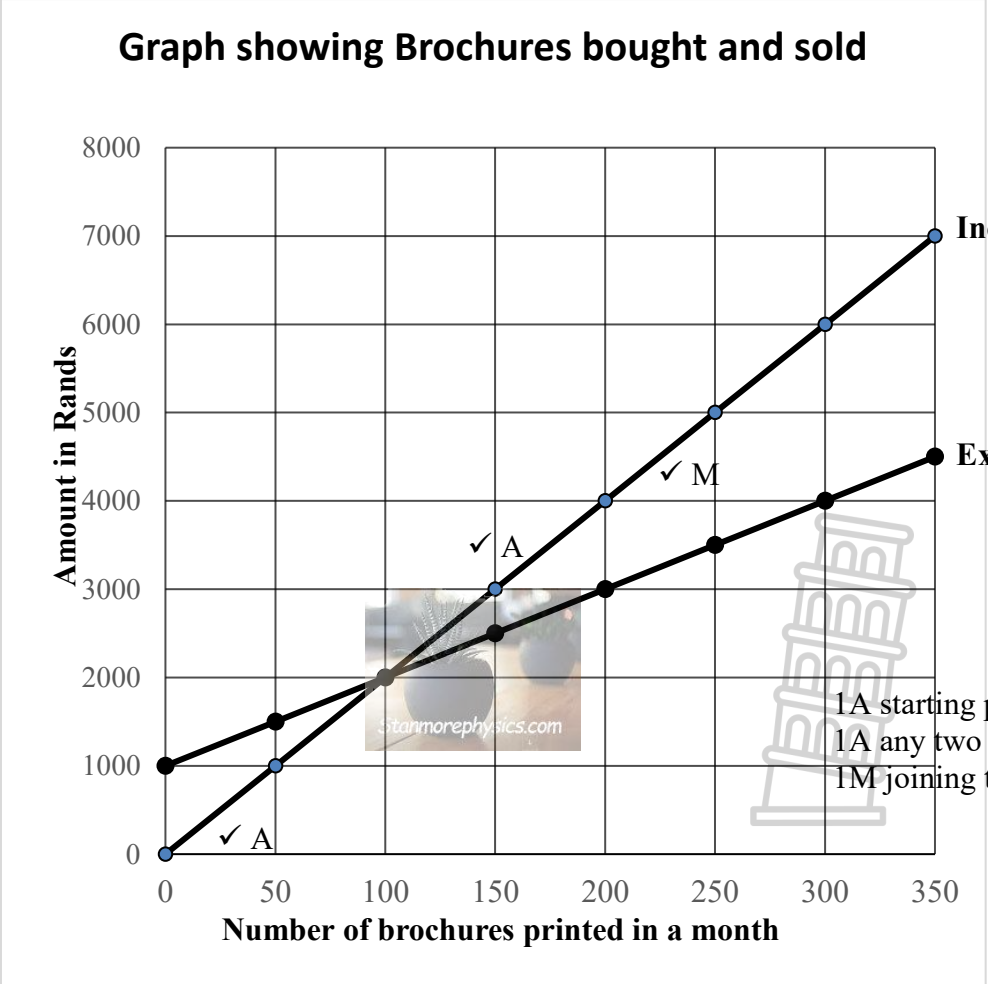
- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, merk slegs die EERSTE poging.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout.*
- *Let wel: volgehoue akkuraatheid (CA) geld nie in die geval van 'n afbreuk nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene merkbeginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor.*

QUESTION/*VRAAG* 1 [14 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
1.1.1	C ✓✓A	2A answer (2)	F L1 E
1.1.2	D ✓✓A	2A answer (2)	F L1 E
1.1.3	F ✓✓A	2A answer (2)	F L1 E
1.1.4	B ✓✓A	2A answer (2)	P L1 E
1.2.1	✓ RT ✓ A 122,2 ; 90,1 ; 42,7 ; 10,1 ; – 6,7 ; – 1,1 ; – 17,4.	1RT All correct values 1A descending order. (2)	D L1 M
1.2.2	✓✓ A Tracksuit top.	2A answer (2)	D L1 M
1.2.3	✓ MA Difference / *Verskil* = R171,00 – R89,95 = R81,05 ✓ A	1MA subtracting correct values. 1A difference. (2)	F L1 E
		[14]	

QUESTION/*VRAAG* 2 [26] MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
2.1.1	✓✓A A list of Mr Venter's expected income and expenses for his trip to South Africa.	2A Correct definition (2)	F L1
2.1.2	✓MA Car hire: € 23,52 × 12 = €282,24. ✓MA Accommodation: € 31,69 × 11 = €348,59. ✓MCA Meals: € 22,39 × 12 = €268,68. **Adding total costs:** ✓MCA = €1 003 + €282,24 + €348,59 + €268,68 + €500 = €2 402,51 ✓CA	1MA Multiplying Car hire with 12 days 1MA Multiplying. accommodation with 11 1MCA Multiplying Meals with 12 1MCA Adding amounts. 1CA Answer (5)	F L2 L3
2.1.3	**Exchange from Euro to Rands:** ✓MCA ✓CA €2 402,51 × 20,10 = R48 290,45	**CA from 2.1.2** 1MCA Multiplying with correct exchange rate 1CA Answer (2)	F L2
2.1.4	**DO NOT MARKK 2.1.4** **(mark out of 20 and scale up back to 26 according to formula at the end)** Calculating compound interest: ✓MA Year 1: €2 200 × × $\frac{6}{100}$ ✓A = €132 + € 2 200 = €2 332 ✓A Year 2: €2 332 × $\frac{6}{100}$ ✓MCA = €139,92 + €2 332 = €2 471,92 ✓CA Yes Mr Venter will have enough money ✓O ✓MA **OR** Year 1: €2 200 × $\frac{106}{100}$ ✓A = €2 332 ✓A ✓MCA Year 2: €2 332 × $\frac{106}{100}$ = €2 471,92 ✓CA ✓O Yes Mr Venter will have enough money that is more than €2 402,51	1MA Calculating interest 1A Interest of year 1 1A Amount end of year 1 1MCA Calculating interest 1CA Amount end of year 2 1O Conclusion (CA from 2.1.2) 1A Calculating $\frac{106}{100}$ 1MA Calculating interest 1A Amount end of year 1 1MCA Calculating interest. 1CA Amount end of year 2 1O Conclusion (CA from 2.1.2) (6)	F L4

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.2.1	Value Added Tax ✓✓A	2A Writing in full (2)	F L1
2.2.2	✓MA Block 2s Maximum kWh = 400 – 100 = 300kWh ✓A	1MA Subtracting correct values. 1A Correct answer (2)	F L1
2.2.3	100 kWh × R2,0970 = R209,70 ✓A 300 kWh × R2,4541 = R736,23 ✓CA 12 kWh × R2,6738 = R32,0856 ✓CA ✓MCA Total including VAT = R209,70 + R736,23 + R32,0856 = R978, 02 ✓CA	1A cost for BLOCK 1 **R2,0970 × (100 – 0) kWh** 1CA cost for BLOCK 2 **R2,4541 × (400 – 100)kWh** 1CA cost for BLOCK 3 **R2,6738 × (412 – 400)kWh** 1MCA adding values. 1CA Answer. (5)	F L3
2.2.4	✓✓A 100%.	2A correct percentage (2)	P L2
		[26]	

QUESTION/*VRAAG* 3 [15 MARKS/*PUNTE*]			
Q/*V*	**Solution / *Oplossing***	**Explanation / *Verduideliking***	**T/L**
3.1.	✓A ✓A Discrete, can be counted and is whole numbers.	1A Answer 1A Reason (2)	D L1
3.2	✓✓A Observation.	2A (2)	D L1
3.3	Numbers in ascending order: ✓RT ✓A 10 , 16 , 19 , 21 , 22 , 24 , 27 , 30 , 30 , 41	1RT All correct values 1A ascending order. (2)	D L1
3.4	✓RT Median = $\frac{33+36}{2}$ ✓M = 34,5✓CA	1RT identifying 22 and 24. 1M using the formula for median 1CA Answer (3)	D L2
3.5	Mean of TOYOTA = $\frac{20+24+25+29+33+36+36+43+46+58}{10}$ $= \frac{350}{10}$ ✓MA ✓M = 35 ✓CA Mean of VOLKSWAGEN = $\frac{22+41+30+16+10+24+30+19+27+21}{10}$ $= \frac{240}{10}$ = 24 ✓CA Difference in avarage = 35 – 24 = 11 ✓MCA The son is not correct. ✓O	1MA adding correct values. 1M mean concept. 1CA answer 1CA answer 1MCA for subtracting mean Values. 1O Conclusion (6)	D L4
		[15]	

QUESTION/*VRAAG 4* [20 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
4.1.1	✓A ✓A Total expenses = R1 000 + R10 × number of brochures printed	1A R 1000 1A R10 × number of brochures printed. (2)	F L2
4.1.2	A = R 20 × 100 = R 2 000 ✓A B = R 3 000 ÷ R20 ✓ M = 150 ✓ A OR B = (R2 500 – R1 000) / R10 $= \frac{1500}{10}$ ✓ M = 150 ✓ A	1A answer 1M dividing the correct values 1A correct answer 1M subtracting 1000 and dividing by 10 1A correct answer (3)	F L1
4.1.3	 1A starting point. 1A any two correct points 1M joining the points. (3)	F L2 M

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
4.1.4	Income = R20 × 160 = R 3 200 ✓CA Expenses = R1 000 + R10 × 160 = R 2 600 ✓CA Profit = Income – Expenses = R 3 200 – R 2 600 ✓SF = R 600 ✓ CA	1CA Calculating income 1CA Calculating expenses 1SF correct substitution 1CA answer (4)	F L3
4.2.1	✓✓ RT 45 – 54.	2RT correct age interval (2)	D L3
4.2.2 (a)	✓ ✓ O As of January 2024, women in the age group of 25 to 34 years accounted for 15,8 percent and men 14,9 percent of social media users in South Africa.	2O opinion (2)	D L4 M
4.2.2 (b)	✓ ✓ O Women percentage use was **higher** compared to 14.9 percent for men in the same age bracket.	2O opinion (2)	D L4 M
4.2.3	✓ ✓ O Female social media usage is higher than that of males except in age group 35 – 44 and 45 – 54.	2O opinion (2)	D L4
		[20]	
		TOTAL/*TOTAAL*: 75	

GRADE 11 PAPER 1 **24 May 2024**

INSTRUCTION:

Question **2.1.4** **MUST not be marked** as the compound interest is planned for later time in the year.

	Question 2 Allocation of marks
Actual mark	**CONVERTED MARK**
1	1
2	3
3	4
4	5
5	7
6	8
7	9
8	10
9	12
10	13
11	14
12	16
13	17
14	18
15	20
16	21
17	22
18	23
19	25
20	26