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education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

SEPTEMBER 2023

MARKS: 150

TIME: 3 hours

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This question paper consists of 10 pages and an addendum with 5 annexures.

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INSTRUCTIONS AND INFORMATION

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

2. Use the ANNEXURES in the ADDENDUM for the following questions:

   ANNEXURE A for QUESTION 1.1
   ANNEXURE B for QUESTION 3.1
   ANNEXURE C for QUESTION 4.1
   ANNEXURE D for QUESTION 4.2.1
   ANNEXURE E for QUESTION 5.1

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.

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QUESTION 1

1.1

Farmer Brown compared chicken egg prices from one of the local SPAR supermarkets, to adjust his selling prices of eggs. He mainly sells to local schools and coffee shops.

ANNEXURE A shows the prices of SPAR the supermarket compared to Farmer Brown's chicken eggs.

Use the ANNEXURE A to answer the questions that follow.

1.1.1 How many eggs are in a double tray? (2)

1.1.2 Name two ways that an egg can be served. (2)

1.1.3 Determine **A**, the cost of a dozen eggs at SPAR, if it is double the price of a half a dozen eggs. (2)

1.1.4 Calculate the unit price for one egg from the 18's egg tray of SPAR. (2)

1.1.5 Calculate, **B,** the price Farmer Brown will charge for a tray of eggs if the tray is sold for 22% less than SPAR's price. (3)

1.1.6 One of the local schools has four hostels. They purchase eight boxes of eggs per week. One box consists of 360 eggs.

Determine the number of eggs they use in February. (3)

1.1.7 Farmer Brown charged them for the eggs per double tray.

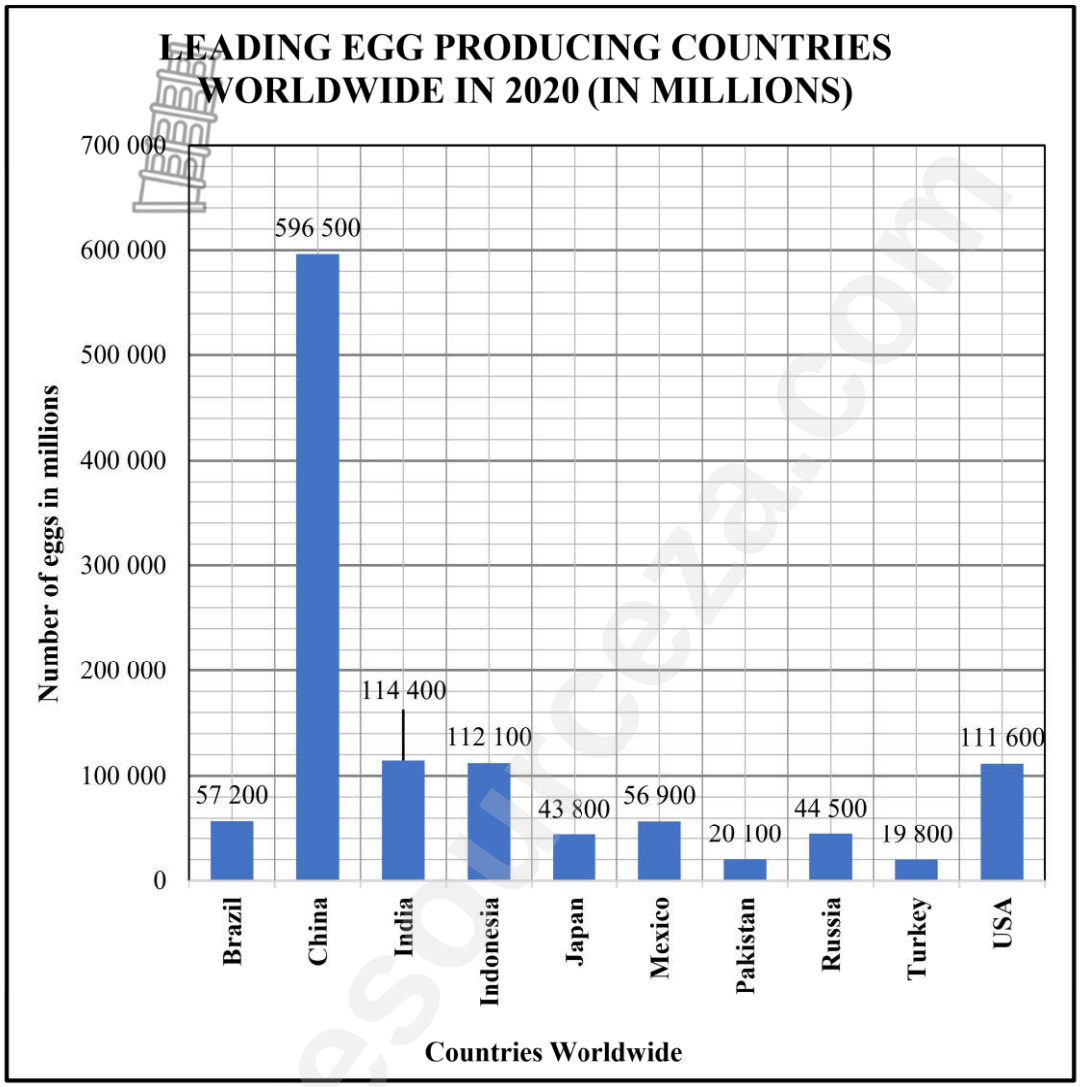
Calculate the total amount they paid for the eggs in February. (3)

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1.2 Statistics are collected of leading egg producing countries worldwide.



[Adapted from statista.com]

Use the graph above to answer the questions that follow.

1.2.1 Arrange the number of eggs produced in ascending order. (2)

1.2.2 Write down the value of the eggs produced in Mexico in words. (2)

1.2.3 Identify the country with the third lowest egg production. (2)

1.2.4 Determine the difference between the eggs produced in China and India. (3)

1.2.5 Write down, as a simplified ratio, the number of eggs produced in Turkey to the number of eggs produced in Brazil. (3)

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QUESTION 2

2.1 Roxanne runs a farm in Gauteng. It is essential to constantly have power on the farm. She studied the price increase in the petroleum products, to see how it will influence their production costs.

TABLE 1: PETROLEUM PRODUCTS: PRICES IN CENTS PER LITRE

COASTAL				
	Jan 2021	**July 2021**	**Jan 2022**	**July 2022**
95 LRP (c/ℓ)	1 416,00	1 667,00	1 889,00	2 609,00
95 ULP (c/ℓ)	1 416,00	1 667,00	1 889,00	2 609,22
Diesel 0,05% (c/ℓ)	1 240,12	1 447,12	1 663,18	2 475,24
Diesel 0,005%(c/ℓ)	1 241,52	1 450,52	1 666,58	2 487,64

GAUTENG				
93 LRP (c/ℓ)	1 467,00	1 720,00	1 936,00	2 631,00
93 ULP (c/ℓ)	1 469,00	1 720,00	1 936,00	2 631,00
95 ULP (c/ℓ)	1 486,00	1 739,00	1 961,00	2 674,00
Diesel 0,05% (c/ℓ)	1 300,42	1 508,62	1 724,68	2 540,44
Diesel 0,005%(c/ℓ)	1 301,82	1 512,02	1 728,08	2 552,84

[Adapted from sapia.org.za]

Use the TABLE 1 above to answer the questions that follow.

2.1.1 Write the price of Diesel 0,05% July 2021 of Gauteng in rand. (2)

2.1.2 Roxanne calculated that they have load shedding for 2,5 hours, 3 times per day stage 4 load shedding. She uses 7 liters of diesel per 2,5 hours. Calculate the cost for 0,05% diesel per day in July 2022 in c/ℓ. (3)

2.1.3 Roxanne stated that there is more than 20% difference between the:
* percentage difference from January to July 2022 petrol price 95 (LRP) and
* percentage difference from January to July 2021 petrol price 95 (LRP) in the Coastal area.

Verify, showing ALL calculations, whether her predictions will be correct.

You may use the formula:

$$\textbf{Percentage difference} = \frac{\textbf{New price} - \textbf{Old price}}{\textbf{Old price}} \times 100\%$$

(7)

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2.2 With the constant loadshedding they decided to install a generator on the farm. Cillian, her farm manager, contacted the dealers and decided on a Cummins 140 kVA diesel generator.

Below are the prices that Cilian sourced from the dealers.



CASH PRICE	HIRE PURCHASE
R326 395 (VAT inclusive)	Deposit: 10%
(13,5% discount on cash purchase)	Monthly instalment: R17 031,70
	Time: 2 years
Installation fee: R35 000	

Use the above information and answer the questions that follow.

2.2.1 Explain the term *hire purchase*. (2)

2.2.2 Determine, excluding VAT, the generator's cash price. (3)

2.2.3 Calculate the total amount Cillian would pay for the generator if he paid cash for the generator with installation. (5)

2.2.4 Roxanne requested that he should also calculate what the difference in price will be, if the generator was bought with a hire purchase agreement. Show ALL calculations. (8)
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QUESTION 3

TABLE 3 on ANNEXURE B represents the participants for the Comrades Marathon from 2007 until 2019.

Use the ANNEXURE B to answer the questions that follow.

3.1 State whether the above data set is classified as discreet or continuous. (2)

3.2 Explain the term *mode*. (2)

3.3 Determine the route that had the most total entries from 2008 to 2019. (4)

3.4 Determine the median number of female finishers of the Comrades Marathon participants for the period 2007 to 2019. (3)

3.5 Determine the value of **A**, the highest number of total finishers if the range is 7 856. (3)

3.6 Calculate the mean number of starters for the Comrades Marathon for the year 2007 to 2019. (4)

3.7 Determine the percentage athletes entered that did not finish in 2019. (5)

3.8 Give a possible reason why there is a difference in the participants that started the race and those that finished the race. (2)

3.9 Determine the probability (as a percentage rounded to ONE decimal place) of randomly selecting a female finisher in 2011. (4)

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QUESTION 4

4.1

Harvey a swimming instructor that lives in Johannesburg, had maintenance done on his swimming pool. His pool is on his residential premises. He drained the pool and after the maintenance was done, it had to dry for 7 days.

The pool had to be refilled with water before the preseason for the Provincial Gala. The pool needs 150 kℓ to be filled to the brim.

Use the ANNEXURE C and the information above and answer the questions that follow.

4.1.1 Explain the term *tariff*. (2)

4.1.2 Write down the tariff for above 60 kℓ for Tswane. (2)

4.1.3 Calculate the amount Harvey will pay to fill his pool, VAT included, if it is filled 95% of the capacity of the pool. (8)

4.2

Mr Caviezel, an educator, earns a taxable income of R29 470,00 per month. He is married and has one daughter. He was born in 1967.

Medical aid: Mr Caviezel, his wife and one child are covered by the medical aid.

ANNEXURE D shows the monthly personal tax payable.

Use ANNEXURE D to answer the questions that follow.

4.2.1 Calculate Mr Caviezel's annual Medical Tax Credits. (4)

4.2.2 Mr Caviezel states that he will pay R50 000 towards his personal income tax per annum.

Verify, showing ALL calculations, whether his statement will be correct. (7)

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4.3 Kalt WerdenVorganger shared a monthly savings strategy at 7% interest for two different amounts.

TABLE 4: AMOUNTS SAVED PER YEAR

YEAR	$240/MONTH	$475/MONTH
1	3 228	6 388
2	6 425	12 716
3	9 846	19 487
4	13 506	26 732
5	17 423	34 484
6	21 614	42 778
7	26 098	51 653
8	30 897	61 150
9	36 037	71 311
10	41 524	82 183
11	47 402	93 817
12	53 691	106 265

[Adapted from auscacoop.com]

4.3.1 Kalt saved $475 a month for 12 years. He decided to divide the money between his two children Kally and Kristen in the ratio 5:7.

Calculate the amount each child will receive. (4)

4.3.2 Kalt stated that the inter quartile range when $240 is saved, is $27 104,50.

Verify, showing ALL calculations, whether his statement will be correct. (7)

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QUESTION 5

The table on the ANNEXURE E represents the ten schools with the highest school fees in South Africa for the year 2020.

Use the TABLE in ANNEXURE E and answer the questions that follow.

5.1 Identify the name of the school with the second highest total school fees. (2)

5.2 Calculate the value of **A**. (2)

5.3 Calculate what percentage of the total school fees of St John's College will be paid towards boarding fees (3)

5.4 Determine the probability that the total school fees are above R270 000. Write your answer as a decimal number. (3)

5.5 The Shelby family wants to enrol their triplets, two girls in St Andrews's College and son in Michaelhouse. The grandparents insisted in paying 60% of the annual amount. Calculate the total school fees per month, if they pay over a 10-month period. (7)

5.6 The grandparents paid £27 500 into the Shelby family's account. Determine if it will cover 60% of the expenses towards the school fees if the exchange rate is 1£ = R19,4020. (4)

5.7 Thomas decides to invest money in a fixed deposit to save for the amount they need to pay towards school fees. He pays R250 000 into an account for two years. The bank offers him an interest rate that is compounded annually at an interest rate of 6,25% for the first year and 7,75% per annum for the second year. Thomas estimates that he will receive more than R35 000 on interest in the 2 years.

Calculate, showing ALL calculations, if his estimation is correct. (7)
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TOTAL: 150

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GRADE/*GRAAD* 12

MATHEMATICAL LITERACY P1/
WISKUNDIGE GELETTERDHEID V1

SEPTEMBER 2023

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

Symbol/*Kode*	Explanation/*Verduideliking*
M	Method/*Metode*
MA	Method with accuracy/*Metode met akkuraatheid*
MCA	Method with consistent accuracy/*Metode met volgehoue akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/graph/document/diagram/*Lees vanaf tabel/grafiek/dokument/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in 'n formule*
O	Opinion/Explanation/*Opinie/Verduideliking*
P	Penalty, e.g. for no units, incorrect rounding off, etc./*Penalisasie, bv. vir geen eenhede, verkeerde afronding, ens.*
R	Rounding off/*Afronding*
NPR	No penalty for rounding/*Geen penalisasie vir afronding nie*
AO	Answer only/*Slegs antwoord*
RCA	Rounding consistent with accuracy/ *Afronding met volgehoue akkuraatheid*
NPU	No penalty for omitting unit, but wrong unit is penalised/ *Geen penalisasie indien die eenheid uitgelos is, maar wel indien 'n verkeerde eenheid gebruik word*

These marking guidelines consist of 13 pages.
Hierdie nasienriglyne bestaan uit 13 bladsye.

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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.
- Rounding is an independent mark.
- In opinion type questions marks will only be awarded if relevant calculations are shown.

LET WEL:
- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou egter op by die tweede berekeningsfout.*
- *LET WEL: volgehoue akkuraatheid (CA) geld nie in die geval van 'n afbreek nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene nasien beginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor.*
- *Afronding tel as 'n afsonderlike punt.*
- *In opinie tipe vrae sal punte slegs toegeken word indien relevante berekeninge aangetoon is.*

Note: Questions marked with *refers to notes/*Vrae gemerk met*, vewys na die notas.*
Questions where the numbers are encircled are the ones where we have a tolerance range.
Vrae waar die nommer omkring is, is waar ons 'n toleransie omvang het.

QUESTION/*VRAAG* 1 [29 MARKS/*PUNTE*] ANSWER ONLY FULL MARKS			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
1.1.1	✓MA $30 \times 2 = 60$ ✓A	1MA correct value multiplied by 2 1A number of eggs (2)	F L1
1.1.2	Baked, poached, boiled, scrambled eggs ✓✓A *Gebak, posjeer, gekook, roereier*	2A any two correct/*enige twee* (2)	F L1
1.1.3	✓MA R14,99 × 2 = R29,98 ✓A	1MA multiplying correct value by 2 1A correct amount/*korrekte bedrag* (2)	F L1
1.1.4	✓MA R34,99 ÷ 18 = R1,94 ✓A	1CA dividing R34,99 with 18/*deling* 1A unit cost per egg/*eenheidskoste per eier* (2)	F L1

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1.1.5	✓MA R64,99 × 22% = R14,2978 ✓MCA R64,99 – R14,2978 = R50,69 ✓CA **OR/*OF*** 100% – 22% = 78% ✓MA R64,99 × 78% ✓MCA = R50,69 ✓CA	1MA multiplying correct value with 22% 1MCA adding answer to original amount 1CA price for egg tray 1MA subtracting 22% from 100% 1MCA multiplying amount with 78% 1CA price for egg tray (3)	F L1
1.1.6	✓MA 360 × 8 boxes/*bokse* = 2 880 eggs/*eiers* ✓MCA ✓CA 2 880 × 4 = 11520 eggs/*eiers*	1MA multiply 360 by 8 1MCA multiply answer by 4 weeks 1CA correct number of eggs (3)	F L1
1.1.7	✓CA 11 520 ÷ 60 = 192 eggs/*eiers* 192 × R95,50 ✓MCA = R18 336 ✓CA	**CA** from 1.1.6 1CA divide by 60 1MCA multiply with R95,50 1CA amount paid/*bedrag betaal* (3)	F L1
1.2.1	✓RT 19 800 million; 20 100 million; 43 800 million; 44 500 million; 56 900 million; 57 200 million; 111 600 million; 112 100 million; 114 400 million; 596 500 million ✓A	1RT correct values/*korrekte waarde* 1A ascending order/*stygende orde* (2)	D L1
1.2.2	Fifty-Six Billion Nine Hundred Million ✓✓A *Ses en vyftig biljoen, negehonderd miljoen.*	2A correct wording/*korrekte bewoording* (2)	D L1
1.2.3	Japan ✓✓A	2A correct country/*korrekte land* (2)	D L1
1.2.4	✓RT ✓MA 596 500 million – 114 400 million = 482 100 million ✓A	1RT correct values 1MA subtracting correct values/*aftrekking van korrekte waarde* 1A number of eggs (3)	D L1
1.2.5	19 800 million : 57 200 million ✓A ✓A ✓A 9 : 26	1RT correct values in correct order 1A correct simplification 1A written in correct ratio(3)	D L1
		[29]	

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QUESTION/*VRAAG* 2 [30 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
2.1.1	R1 508,62÷ 100 ✓MA = R15,09 ✓A	1MA conversion/*herlei* 1A answer in rand/*antwoord in rand* (2)	F L1
2.1.2	Cost for diesel/*Dieselkoste* 7 × 3 = 21 ✓MA 21 × 2540,44 ✓MA = 53 349,24 c/ℓ ✓A	1MA multiply 7 litres with 3 1MA multiply answer with correct value 1CA correct cost/*korrekte koste* (3)	F L2
2.1.3	Coastal/*Kus* - 2021 % Difference/*Verskil* = $\frac{New - Old}{Old} \times 100\%$ ✓RT = $\frac{1667 - 1416}{1416} \times 100\%$ = 17,726% ✓A Coastal/*Kus* - 2022 % Difference/*Verskil* = $\frac{\mathbf{New - Old}}{\mathbf{Old}} \times 100\%$ ✓RT = $\frac{2609 - 1889}{1889} \times 100\%$ ✓A = 38,115% ∴ 38,115% – 17,726% ✓MCA = 20,389% ✓CA Yes, her statement is correct ✓O *Ja, haar stelling is korrek*	1RT substituting correct values/*vervanging van korrekte waardes* 1A simplification/*vereenvoudig* 1RT substituting correct values 1A simplification/*vereenvoudig* MCA subtracting correct percentages 1CA percentage difference 1O correct conclusion (7)	F L4

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
2.2.1	Hire purchase ✓✓O A system by which someone pays for a thing/goods in regular instalments while having the use of it. *Huurkoop* *'n Sisteem waar iemand betaal vir iets/goedere in gereelde paaiemente terwyl hulle die gebruik het daarvan.* **OR/OF** You have the goods and then you pay an agreed amount by installments until it is paid off. *Jy het die gebruik van goedere en betaal 'n vasgestelde bedrag in paaiemente totdat dit afbetaal is.* ✓✓O	2A Explanation of hire purchase/*verduidelik huurkoop* (2)	F L1
2.2.2	✓RT R326 395 ÷ 1,15 ✓MA = R283 821,74 ✓A **OR/*OF*** ✓RT R326 395 × $\frac{100}{115}$ ✓MA = R283 821,74 ✓A	1RT correct value 1MA dividing with 1,15 1A amount VAT excluded 1RT correct value 1MA multiplying with $\frac{100}{115}$ 1A amount VAT excluded (3)	F L2
2.2.3	Cash amount/*Kontant bedrag* 100% – 13,5% = 86,5% ✓MA R326 395 × 85,6% ✓MA = R282 331,675 ✓A R282 331,675 + R35 000,00 ✓MCA = R317 331,68 ✓CA **OR/OF** Cash amount/*Kontant bedrag* R326 395 × 13,5% ✓MA = R44 063,325 ✓CA R326 395 – R44 063,325 ✓MCA R282 331,675 + R35 000,00 ✓MA = R317 331,68 ✓CA	1MA subtracting 13,5 % from 100% 1MCA multiplying correct amount by 86,5% 1CA answer 1MA adding R35 000 1CA correct cash amount/*korrekte kontant bedrag* 1MA multiplying correct value by 13,5 % 1A answer 1MCA answer 1MA adding R35 000 1CA correct cash amount/ *korrekte kontant bedrag* (5)	F L2

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
2.2.4	Amount saved/*Bedrag gespaar* R326 395 × 10% ✓MA = R32 639,50 ✓A ✓MA R17 031,70 × 24 = R408 760,80 ✓S R408 760,80 + R32 639,50 ✓MCA = R441 400,30 ✓CA R441 400,30 – R317 331,68 ✓MCA = R124 068,62 ✓CA	**CA** from Q2.2.3 1MA multiply cash price by 10% 1A correct amount 1MA multiply by 24 months 1S simplification 1MCA adding the deposit to monthly instalments 1 CA simplification 1MCA subtracting cash amount 1CA amount saved (8)	F L3
		[30]	

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QUESTION/*VRAAG* 3 [29 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduidelikin g***	**T&L**
3.1	Discreet/*Diskreet* ✓✓A	2A discreet (2)	D L1
3.2	✓✓A The value that appears the most/*Die waarde wat die meeste voorkom.*	2A explanation/ *verduideliking* (2)	D L1
3.3	Up/*Opdraende* ✓MA 11 189 + 19 591 + 19 907 + 22 402 + 41 494 + 24 594 = 119 177 entries/*inskrywings* ✓A Down/*Afdraende* 12 952 + 23 567 + 19 545 + 20 104 + 21 569 + 21 272 = 119 009 entries/*inskrywings* ✓A 119 177 – 119 009 = 168 entries/*inskrywings* ✓CA The UP race had 168 more entries *Die opdraende resies het 168 meer inskrywings*	1MA adding correct values 1A total entries up 1A total entries down 1CA difference in entries (4)	D L3
3.4	✓RT 1 412; 1 749; 1 763; 1 961; 2 184; 2 334; 2 440; 2 504; 2 700; 2 959; 3 055; 3 128; 3 372 ✓A Median/*Mediaan* - 2 440 ✓CA	1RT correct values 1A ascending order/ *stygende orde* 1CA correct median (3)	D L2
3.5	Range = Highest value – Lowest value 7 856 = A – 8 626 ✓MA 7 856 + 8 626 = A ✓MA A = 16 482 ✓A **OR/*OF*** ✓MA A = 13 110 + 3 372 ✓RT = 16 482 ✓A	1MA substitution into formula 1MA simplifying 1A correct highest value 1RT correct values 1MA adding correct values 1A correct highest value (3)	D L2

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
3.6	Mean = $\frac{\text{sum of all the values}}{\text{number of values}}$ ✓MA $= \frac{11\,147+10\,330+11\,345+16\,482+12\,648+16\,613+18\,578+14\,693+16\,517+16\,807+17\,031+19\,047+19\,078}{13}$ $= \frac{200\,316}{13}$ ✓MA = 15 408,92308 ✓CA ∴ = 15 409 athletes/*atlete* ✓A	1MA adding correct values/ *tel korrekte waarde op* 1MA concept of mean dividing by 13 1CA correct answer 1CA correct rounded answer (4)	D L2
3.7	Percentage athletes that did not finish/*Persentasie atlete wat nie klaar gemaak het nie.* ✓MA $= \frac{19\,078}{24\,594} \times 100$ ✓MA = 77,57% ✓A 100 % − 77,57% ✓MA = 22,428% ≈ 22,43% ✓CA **OR/OF** ✓MA 24 594 – 19 078 = 5 516 ✓A ✓MA $= \frac{5\,516}{24\,594} \times 100$ ✓MA = 22,43% ✓A	1MA dividing correct values 1MA percentage calculation 1A simplification/ *vereenvoudiging* 1MA subtracting % from 100% 1A correct rounded answer/ *korrek afgerond* 1MA subtracting correct values 1A correct answer 1MA dividing correct values 1MA percentage calculation 1A correct rounded answer (5)	D L3
3.8	Some of the athletes did not finish the race due to injuries. Athletes did not finish before the cut off time. *Seker atlete het nie klaar gemaak as gevolg van beserings.* *Atlete het nie voor die afsnytyd klaar gemaak nie.*	2O correct opinion (2)	D L4
3.9	Probability/*Waarskynlikheid* ✓A Probability = $\frac{2\,184}{11\,054} \times 100$ ✓MA ✓A = 19,757% ≈ 19,8% ✓CA	1A correct numerator 1A correct denominator 1M percentage calculation 1CA simplification (4)	D L2
		[29]	

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QUESTION/*VRAAG* 4 [34 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
4.1.1	Tariff/*Tarief* ✓✓A It is a service charge that the city charges for the use of service it renders such as water or electricity. *Dit is 'n diensfooi wat deur die stad gehef word vir dienste gelewer, bv water en elektrisiteit.*	2A explanation/ *verduideliking* (2)	F L1
4.1.2	41,01R/kl ✓✓A	2A correct tariff (2)	F L1
4.1.3	Total amount/*Totale bedrag* 150*kℓ* × 95% ✓MA = 142,50*kℓ* ✓A 0,00 × 6 ✓MA = 0,00 20,28 × 4 = 81,12 ✓CA 21,17 × 5 = 105,85 29,68 × 5 = 148,40 41,01 × 10 = 410,10 44,86 × 10 = 448,60 ✓CA 56,59 × 10 = 565,90 60,65 × 92,5 = 5 610,13 **7 310,10** ✓MCA R7 310.10 + R28,32 (fixed cost) ✓MCA = R7 398,42 R7 398,42 × 115% = R8 508.18 ✓CA	1MA multiplying correct *kℓ* with 95% 1A number of *kl* 1MA Multiplying correct values 1CA simplification 1CA simplification 1MCA answer all values added 1MCA adding fixed cost 1CA answer with VAT included (8)	F L3
4.2.1	Medical credit/*Mediese krediet* (R310 + R310) +R209 ✓MA R620 + R209 ✓A R829 × 12 ✓MA = R9 948 ✓A	1MA correct credits 1A simplification 1MA multiplying by 12 1A correct credit (4)	F L2
4.2.2	R29 470 × 12 R353 640 ✓MA ✓ MA R70 352 + 31% (R353 640 – R337 800) ✓MA R70 352 + 31% (R15 840) R70 352 + R4 910,40 ✓A R75 262,40 – R15 714 (rebate) ✓MA R59 548,40 – R9 948 (medical aid) R49 600,40 ✓A His statement is incorrect/ *Hy is nie korrek nie* ✓O	1MA annual taxable amount 1MA substitution annual amount 1MA correct tax bracket 1A simplification 1MA subtracting rebate and medical aid credit 1A answer 1O conclusion (7)	F L4

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
4.3.1	5 + 7 = 12 ✓MA ✓MA $\frac{5}{12}$ × R106 265 = R44 227,08 ~ Kally ✓A $\frac{7}{12}$ × R106 265 = R61 987,92 ~ Kristen ✓A	1MA adding ratios 1MA multiplying amount by ratio 1A correct amount Kally 1A correct amount Kristen (4)	F L2
4.3.2	Q2 = $\frac{210614 + 26\,095}{2}$ = 23 856 ✓A Q1 = $\frac{9\,846 + 13\,506}{2}$ ✓MA = 11 676 ✓A Q3 = $\frac{36\,037 + 41\,524}{2}$ = 38 780,50 ✓A IQR = Q3 – Q1 = 38 780,50 – 11 676 ✓MA = 27 104,50 ✓A Yes, his statement is correct. ✓O *Ja, sy stelling is waar.*	1MA quartile 2 answer 1MA concept of quartile correct values divided by 2 1A correct quartile 1 1A correct quartile 3 1CA subtracting quartile 1 from 3 1A correct IQR 1O conclusion (7)	D L4
		[34]	

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QUESTION/*VRAAG* 5 [26 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
5.1	Michaelhouse ✓✓A	2A correct school/ *korrekte skool* (2)	F L2
5.2	Day school fees/*Dag skoolfonds* ✓MA R287 558 – R124 632 =R162 926 ✓A	1MA subtracting correct values 1A correct school fees (2)	F L1
5.3	Boarding fees/*Koshuisgelde* ✓RT $\frac{116\ 531}{284\ 189}$ ✓RT × 100% = 41% ✓A	1RT correct numerator 1RT correct denominator 1A correct percentage (3)	F L2
5.4	$\frac{7}{10}$ ✓RT ✓RT = 70% ✓A	1RT correct numerator 1RT correct denominator 1A correct percentage (3)	F L2
5.5	Total school fees per month/*Totale skoolgelde per maand* R291 000 × 2 = R582 000 ✓MA R582 000 + R303 600 = R885 600 ✓MA R885 600 × 60% ✓MCA = R531 360 ✓CA R885 600 – R531 360 R354 240 ✓CA R354 240 ÷ 10 ✓MCA ✓CA R35 424 per month/*per maand* **OR/*OF***	1MA multiplying correct value with 2 1MA adding correct value 1MCA multiplying with 60% 1CA correct value 1CA subtracting correct values 1MCA dividing answer by 10 1CA correct school fees per month	F L3

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
5.5	Total school fees per month/*Totale skoolgelde per maand* R291 000 × 2 = R582 000 ✓MA R582 000 + 303 600 = R885 600 ✓MA 100% – 60% = 40% ✓MCA 40% × R885 600 ✓MCA = R354 240 ✓CA R354 240 ÷ 10 ✓MCA ✓CA = R35 424 per month/*per maand*	1MA multiplying correct value with 2 1MA adding correct value 1MCA subtracting 60% from 100% 1MCA multiplying with 40% 1CA correct value 1MCA dividing answer by 10 1CA correct school fees per month (7)	
5.6	R885 600 × 60% = R531 360 ✓MA £27 500 × 19,4020 R533 555 ✓MA R533 555 – 531 360 ✓MCA = R2 195 ✓CA Yes, R2 195 more than needed *Ja, R2 195 is meer as voldoende*	**CA from 5.1.5** 1MA multiply total amount with 60% 1MA multiply £27 500 with exchange rate 1MCA subtract two values from one another 1CA correct difference. (4)	F L2
5.7	Interest received after 2 years/ *Rente ontvang na 2 jaar* ✓MA ✓MA R250 000 × 106,25% = R265 625 ✓A R265 625 × 107,25% = R284 882,8125 ✓MCA R284 882,8125 – R250 000 ✓MCA ✓CA = R34 882,81 No, his estimation is not correct. ✓O **OR/OF**	1MA adding 6,25% to 100% 1MA multiplying correct value with 106,25% 1A correct answer 1MCA multiplying answer with new % 1MCA subtracting original amount 1CA correct answer/*korrekte antwoord* 1O conclusion/ *samevatting*	F L4

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	R250 000 × 6,25% = R15 625 ✓MA R250 000 + R15 625 ✓MA = R265 625 ✓A R265 625 × 7,25% = R19 257,8125 R265 625 + R19 257,8125 = R284 882,8125 ✓MCA R284 882,8125 – R250 000 ✓MCA = R34 882,81 ✓CA No, his estimation is not correct. ✓O *Nee, sy bewering is nie korrek nie.*	1MA multiplying with 6,25% 1MA adding answer to original amount 1A correct answer/*korrekte antwoord* 1MCA multiplying answer with new % and adding 1MCA subtracting original amount 1CA correct answer/*korrekte antwoord* 1O conclusion/*samevatting* (7)	
		[28]	
		TOTAL:	**150**

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INSTRUCTIONS AND INFORMATION:

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

2. 2.1 Use the ANNEXURES to answer the following questions:

   - ANNEXURE A for QUESTION 1.1
   - ANNEXURE B for QUESTION 2.1.
   - ANNEXURE C for QUESTION 4.3

   2.2 Hand in the ANSWER SHEET with your ANSWER BOOK.

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 the calculations clearly.

7. Round off ALL final answers appropriately to the given context, unless stated otherwise.

8. Indicate units of measurement, where applicable.

9. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.

10. Write neatly and legibly.



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QUESTION 1

1.1 Due to inflation many South Africans are turning to house brands to help reduce their food budget. The table on ANNEXURE A compares the prices of ten food items and six non-food items at five different retailers in 2023.

Use the information in TABLE 1 in ANNEXURE A to answer the questions that follow.

1.1.1 Identify the shop with the cheapest white sugar. (2)

1.1.2 Define the term *inflation*. (2)

1.1.3 Arrange the frozen mixed vegetables prices of ALL the various retailers in ascending order. (2)

1.1.4 Show how the basket total of R812,84 for Woolworths was calculated. (2)

1.1.5 Calculate the difference in price of a bottle of Chutney at Food Lovers and Spar. (2)

1.1.6 Write down the name of the food item that has the same price at five of the shops. (2)

1.2 A comparison of the 2022 and 2023 basket total is listed in TABLE 2 below.

TABLE 2: A COMPARISON OF 2022 AND 2023 BASKET TOTAL PRICES AT VARIOUS RETAILERS

STORE	2022	2023	% DIFFERENCE
Premium store	R608,34	R707,01	16,21
Spar	R590,84	R732,84	24
Food Lovers	R584,74	R670,84	14,72
Checkers	R567,84	R650,84	14,62
PnP	R563,84	R650,84	15,42

[Adapted from: businesstech.co.za]

Use TABLE 2 to answer the questions that follow.

1.2.1 Classify the data above as numerical or categorical data. (2)

1.2.2 Write down the median for the 2022 basket total prices. (2)

1.2.3 Write down the modal basket price for 2023. (2)

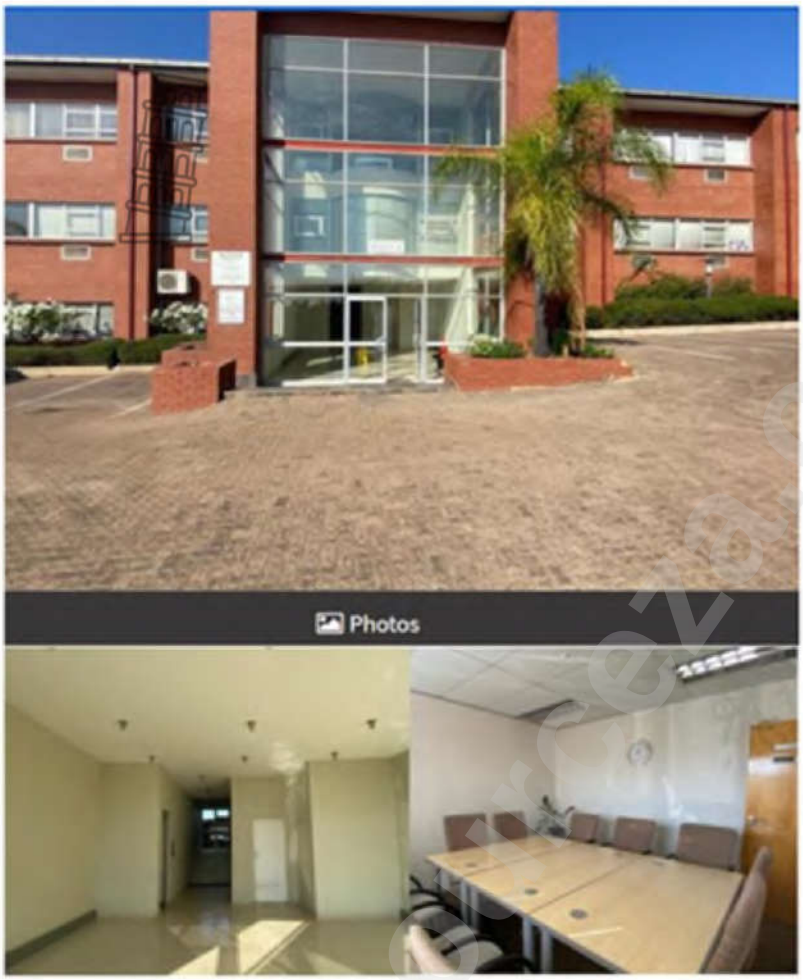
1.2.4 Identify the third highest percentage difference. (2)

1.2.5 Write the percentage difference for Spar as a common fraction. (2)

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1.3 Gary is looking to start his own business and comes across the following advert for commercial property at a monthly rental fee of R20 000.



property24

R 20 000

Commercial Property

160 m²

Office space to RENT:

Included in the rental fee:

1 × Reception Area
4 × Big offices
1 × 10-seater boardroom
1 × Kitchen
2 × Toilets
1 × Storeroom
3 × Undercover parking spaces
2 × Open parking spaces

Additional Costs:

Water and Electricity
Security Fee: R600
Refuse: R107
Deposit: 75% of monthly rent
Penalty fee: 4,25% of monthly rent if rent is not paid on time.

[Adapted from: property24.com]

Use the information above to answer the questions that follow.

1.3.1 A penalty is charged if monthly rent is not paid on time.

Write down the above mentioned percentage. (2)

1.3.2 Write the number of open parking spaces to the number of undercover parking spaces as a ratio. (2)

1.3.3 Write down TWO other additional costs that are not included in the rent. (2)

1.3.4. Calculate the annual rent that Gary will pay. (2)

[30]

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QUESTION 2

2.1 In May 2021 Ms. Adonis bought a house. At the end of April 2023, she received communication from the Bank that her home loan repayments will increase from the first of May.

ANNEXURE B shows the notification of an increase in her monthly interest rate.

Use the information on ANNEXURE B above to answer the questions that follow.

2.1.1 Explain the term *home loan* in your own words. (2)

2.1.2 Identify the loan amount. (2)

2.1.3 Calculate the increase in the interest rate on the loan from May 2021 (when the loan was initiated) to May 2023. (2)

2.1.4 Calculate the estimated total amount that will be repaid for the house at the end of the loan term. (3)

2.1.5 Explain why the amount in QUESTION 2.1.4 is more than the original purchase price of the house. (2)

2.1.6 Ms. Adonis states that her monthly repayment increased with more than the percentage increase in the interest rate between May 2021 and May 2023.

Verify showing the necessary calculations whether her statement is correct. (4)

2.2 In May 2023 Ms. Adonis decided to have her house re-evaluated by an estate agent. The agent evaluated the house for R1 800 000. The estate agent would take 6% of the selling price for agent commission when the house is sold.

Her monthly municipal rates and taxes are R800 and she made the following improvements to the house during her ownership:

- New floors in the living room: R15 000
- Changes to the garden: R6 000
- Paving: R10 000
- General maintenance: R13 000

Calculate the amount of profit she would make if she sold the house for the evaluated price. (4)

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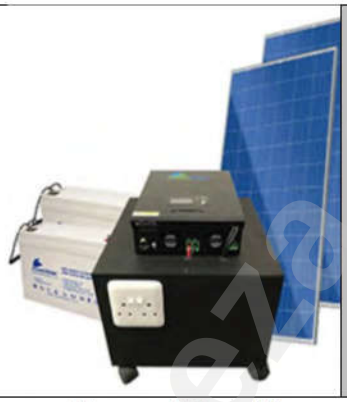
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2.3 To combat the influence of loadshedding Ms. Adonis investigates different power solutions.

She considers installing a solar power system but finds that the cost of such a system has increased drastically, so she inspects other rent-to-own options.

The advertisement below shows two options, a rent-to-own as well as an option to buy it with a once off payment, while TABLE 3 shows additional costs for installing the solar power system.

ADVERTISEMENT SHOWING TWO SOLAR POWER PAYMENT OPTIONS

Rent to own: Deposit of R5 472,78 **R1 216,17 MONTHLY** Over 18 months		**Special!!!** **Now only R35 999 cash**

[Source: Adapted from ecosimplysolar.co.za and makro.co.za]

TABLE 3: INSTALLATION COST

ITEM	PRICE PER UNIT
Extra equipment and material	R14 300
Labour per hour or part thereof	R102,88

Please note: Rent to own refers to the option of renting a system, by paying it monthly and then having the option to buy it at the end of the loan term.

2.3.1 To determine the cost of paying back the system on the rent to own option Ms. Adonis set up the following table.

She used the following formula to complete the table:
Cost of rental = R5 472,78 + (R1 216,17 × number of months)

Month	1	5	6	G	15	18
Cost (R)	**F**	11 553,63	12 769,80	20 066,82	23 715,33	**H**

NOTE: Some Months and Cost values have been omitted.

Complete the table on ANSWER SHEET 1 by calculating the missing values F, G and H. Show all calculations. (6)

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2.3.2 ANSWER SHEET 1 shows the graph of the Cash option drawn. Use the information calculated in your table to draw a graph showing her repayments over the 18-month period. (3)

2.3.3 Ms. Adonis found out that the installation will take 8 hours 45 minutes on the first day and 5 hours 56 minutes on the second day.

Calculate the total cost of installing the cash option solar power system (6)

[34]

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QUESTION 3

3.1 South Africa is a mineral-rich country and there are currently 22 types of minerals mined in South Africa.
A selected group of minerals and the classification of their mines are indicated in TABLE 4.

TABLE 4: SELECTED GROUP OF MINERALS AND THE CLASSIFICATION OF THE MINES IN SOUTH AFRICA.

MINERAL	NUMBER OF MINES	Classification of Mines			
		Operational	Various phases of development	Can return to development phases	Dormant/ Closed
Gold	89	30	35	1	23
Coal	134	59	20	8	47
Diamond	48	15	4	2	27
Platinum Group Metals	96	30	22	1	43
Copper	6	1	3	1	1
Iron Ore	22	5	4	2	11
Manganese	18	1	3	1	13
Uranium	7	1	3	1	2
TOTAL	**420**	**142**	**94**	**17**	**120**

[source: adapted from projectsiq.co.za]

Use the information in TABLE 4 to answer the questions that follow:

3.1.1 Identify the listed mineral with the highest number of mines in South Africa. (2)

3.1.2 Calculate the percentage (rounded to one decimal place) of the number of operational mines within the Platinum Group Metals mines. (4)

3.1.3 Calculate the probability, as a fraction, of randomly selecting a dormant/closed mine from the listed mineral mines in TABLE 4. (2)

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3.2 Mining plays an important role in the South African economy.

The information in TABLE 5 below indicates how the mining industry performed in 2021 for a selected group of the 22 metals and minerals.

TABLE 5: INFORMATION REGARDING CERTAIN SELECTED METALS AND MINERALS OF THE SOUTH AFRICAN MINING INDUSTRY IN 2021.

Metals / Minerals mined	Employees	Export Sales (R thousands)	Local Sales (R thousands)	Total Sales (R thousands)	Exports as a % of Total Sales
Chrome	18 599	10 743 835	11 230 705	21 974 540	48,9%
Coal	92 670	63 717 030	86 381 343	150 098 372	42,5%
Diamonds	12 900	13 210 210	7 928 797	21 139 007	62,5%
Gold	93 998	93 053 603	9 155 869	102 209 471	91,0%
Iron ore	21 427	115 680 173	5 101 679	120 781 852	95,8%
Manganese	13 290	34 341 810	2 757 122	37 098 932	92,6%
Non-ferrous metals	17 953	17 362 184	2 477 656	19 839 840	87,5%
Platinum	171 568	321 271 671	25 253 878	346 525 549	92,7%
TOTAL OF ALL METALS/ MINERALS IN THE SA MINING INDUSTRY	458 954	682 082 493	**A**	849 633 717	80,3%

[Source: Adapted from Minerals Council Facts and Figures 2021]

Use TABLE 5 above to answer the questions that follow:

3.2.1 Calculate the mean value for the number of employees of the listed metals and minerals. (3)

3.2.2 Calculate the range of the Total Sales, in Rands, for the selected group of metals and minerals. (2)

3.2.3 Write the amount of Export Sales for Diamonds in words. (2)

3.2.4 An analyst stated that the interquartile range (IQR) for the total sales of the selected group of metals and minerals is less than R115 000 000 000.

Verify, by showing all calculations if his statement is valid. (7)

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3.2.5 Give ONE reason why the totals of the listed information do not add up to the totals as indicated in TABLE 5. (2)

3.2.6 Calculate the total of all metals and minerals in the South African mining industry for the local sales, as indicated by **A.** (2)

3.2.7 Calculate the probability (expressed as a decimal) of selecting a listed metal or mineral with employees of more than 21 500. (2)

[28]

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QUESTION 4

4.1 The Gauteng Department of Health published their annual report for the 2020/2021 financial year containing information about allocated and actual expenditure for different medical services and sectors.

Table 6 below shows the Provincial Expenditure on different Provincial Hospital Services:

TABLE 6: EXPENDITURE OF GAUTENG PROVINCIAL HOSPITAL SERVICES IN THOUSANDS OF RANDS

Sub-Programme	2020/21			2019/20		
	Final Allocation	Actual Expenditure	(Over)/ Under Expenditure	Final Allocation	Actual Expenditure	(Over)/ Under Expenditure
TB hospitals	333 808	305 465	28 343	325 754	310 335	15 419
Mental Health Hospitals	1 585 024	1 523 443	61 581	1 461 226	1 531 428	(70 202)
Dental Training Hospitals	633 467	563 679	69 788	622 249	551 622	70 627
General Hospitals	7 279 341	7 414 991	**A**	6 768 628	6 735 022	33 606
Other Specialised Hospitals	110 641	98 272	12 369	96 548	96 051	497
TOTALS	9 942 281	9 905 850	36 431	9 274 405	9 224 458	49 947

[Source:2021-Gauteng-Health-Annual-Report]

Use the table to answer the following questions.

4.1.1 Identify the subprogramme that received the largest financial allocation in the 2020/21 financial year. (2)

4.1.2 Determine, as a percentage, the probability of selecting a subprogramme that overspent in the 2019/20 year. (3)

4.1.3 Calculate the missing value **A** in the table. (2)

4.1.4 Calculate the difference in the actual expenditure between 2019/20 and 2020/21 for Other Specialised Hospitals. (3)

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4.2 With the increasing cost in medical bills for pets more owners are taking out Pet Insurance Policies for their pets.

Sihle found the information on two options from pet health care online that is shown in TABLE 7 below.

TABLE 7: PET HEALTH CARE INSURANCE POLICY OPTIONS

PawPaw A	**PawPaw B:**
Monthly premium: R330 per dog* R260 per cat* 	Monthly premium: R275 per dog* R215 per cat* 
Fee structure for claims:	
Standard Excess:	**Standard Excess:**
1. All claims will carry 15% excess, with a minimum of R250 per claim.	**1.** Flat excess of R 1 000 per claim.
Additional Excess:	**Additional Excess:**
2. All claims not pre-authorized will carry an additional excess of 25%, with a minimum amount of R500.	**2.** All claims not pre-authorized will carry an additional excess of 20%, with a minimum amount of R500.
• Age limitation at inception – 8 weeks to 8 years • Waiting Periods – General waiting period: 30 days from start of policy before claims will be considered. • Accidental injuries covered from date of inception.	
Note: A Pet Insurance policy is similar to medical aid, but for pets. Excess is the additional amount you must pay when you make a claim on your policy.	

[Adapted from: pethealthcare.co.za]

Use the information above to answer the following questions.

4.2.1 A dog had a medical procedure of R17 000 that was not pre-authorized.

Calculate the difference in the amount payable by a policyholder on PawPaw A compared to PawPaw B. (8)

4.2.2 Critically discuss why the company would provide a general waiting period. (2)

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4.3 In the United States of America (USA) teachers receive different salary packages depending on the phase of school that they teach.

Rosa has just finished her teacher training and would like to plan her finances for her first year of work.

The graph on ANNEXURE C shows information regarding the annual percentile income estimates for different teaching phases in the USA.

[Source: bls.gov/oes/current/oes252022.html]

Use the information above along with ANNEXURE C to answer the following questions.

4.3.1 Name the measure of central tendency represented by the 50th percentile. (2)

4.3.2 Explain what it would mean if a teacher is in the 10th percentile of annual income in any phase. (2)

4.3.3 Rosa explained to her cousin Claire in South Africa that the difference between the income for a preschool teacher and elementary school teacher on the 50th percentile would be more than R40 000 a month.

Verify, showing all calculations whether this statement is valid.

You may use the exchange rate:

R1 = $ 0,056 (7)

[31]

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QUESTION 5

5.1 Mr. Duze is interested in buying a piece of land. The property will be used for agricultural purposes. When buying a property, transfer duties apply.

TABLE 8 below shows the transfer duty rates for the latest financial year.

TABLE 8: TRANSFER DUTIES FOR 2024 (1 March 2023 – 29 February 2024)

Bracket	Value of the property (R)	Rate
1	1 – 1 100 000	0%
2	1 100 001 – 1 512 500	3% of the value above R1 100 000
3	1 512 501 – 2 117 500	R12 375 + 6% of the value above R 1 512 500
4	2 117 501 – 2 722 500	R48 675 + 8% of the value above R 2 117 500
5	2 722 501 – 12 100 000	R97 075 +11% of the value above R2 722 500
6	12 100 001 and above	R1 128 600 + 13% of the value above R12 100 000

[Source: Adapted from sars.gov.za]

Please note: Transfer duties are the fees associated with the transfer of ownership of a property from the seller to the buyer.

Use the information above to answer the questions that follow

5.1.1 Identify the rate at which transfer duties will be calculated if a person buys a house that costs 1,8 million rand. (2)

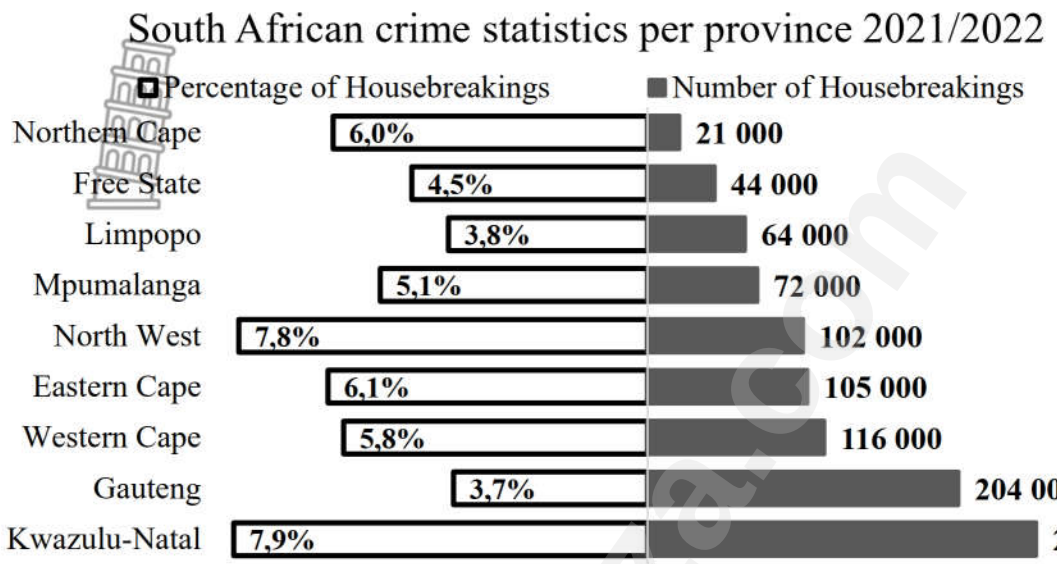
5.1.2 Calculate the transfer duty that Mr. Duze will pay on his agricultural land if the selling price of the land is R 2 850 000 (3)

5.1.3 Name one factor, besides the cost of the property and transfer duty, that Mr Duze should take into consideration when deciding on buying a property for farming. (2)

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5.2 Mr Duze decides to also study the crime statistics before buying the piece of land.
He finds the following crime statistics for 2021/2022 represented in the graph below:



[Adapted from: Statssa]

Note: The percentage of housebreakings represents the part of the provincial population that experienced a housebreaking.

Use the information in the graph above to answer the following questions

5.2.1 Calculate the median number of housebreakings. (3)

5.2.2 Calculate the range in the number of housebreakings. (2)

5.2.3 Calculate the total number of households in the Northern Cape. (3)

5.2.4 Mr Duze's cousin stated that more than four provinces had a percentage of housebreakings above the provincial average percentage.

Verify, showing all calculations whether this statement is valid. (4)

5.2.5 Mr Duze stated that the Western Cape is safer than Gauteng as there were less reported cases of housebreaking.

Critically comment on this statement by referring to all relevant information. (2)

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5.3 After looking at the crime statistics Mr Duze is considering installing electrical fencing around his property.

According to his municipality's website electricity usage is calculated as indicated in Table 9 below.

TABLE 9: ELECTRICITY TARIFFS FOR 2023

For total kWh purchased per calendar month, per kWh	**c/kWh**
Block 1 (0 to 100 kWh)	209,70
Block 2 (More than 100 to 400kWh)	245,41
Block 3 (More than 400 to 650 kWh)	267,38
Block 4 (More than 650 kWh)	288,24

[Adapted from tshwane.gov.za]

Please note: Electricity in Tshwane is calculated on a **fixed rate** according to the block that the usage falls into.

Use the information in TABLE 9 above to answer the following question:

Mr Duze's neighbour told him that after he installed electrical fencing his average monthly electricity usage increased from 600kWh to 900kWh.

Use the Tariff table above to calculate the potential increase (in Rand) in the cost of his electricity bill if he installs electric fencing. (6)

[27]

TOTAL: 150

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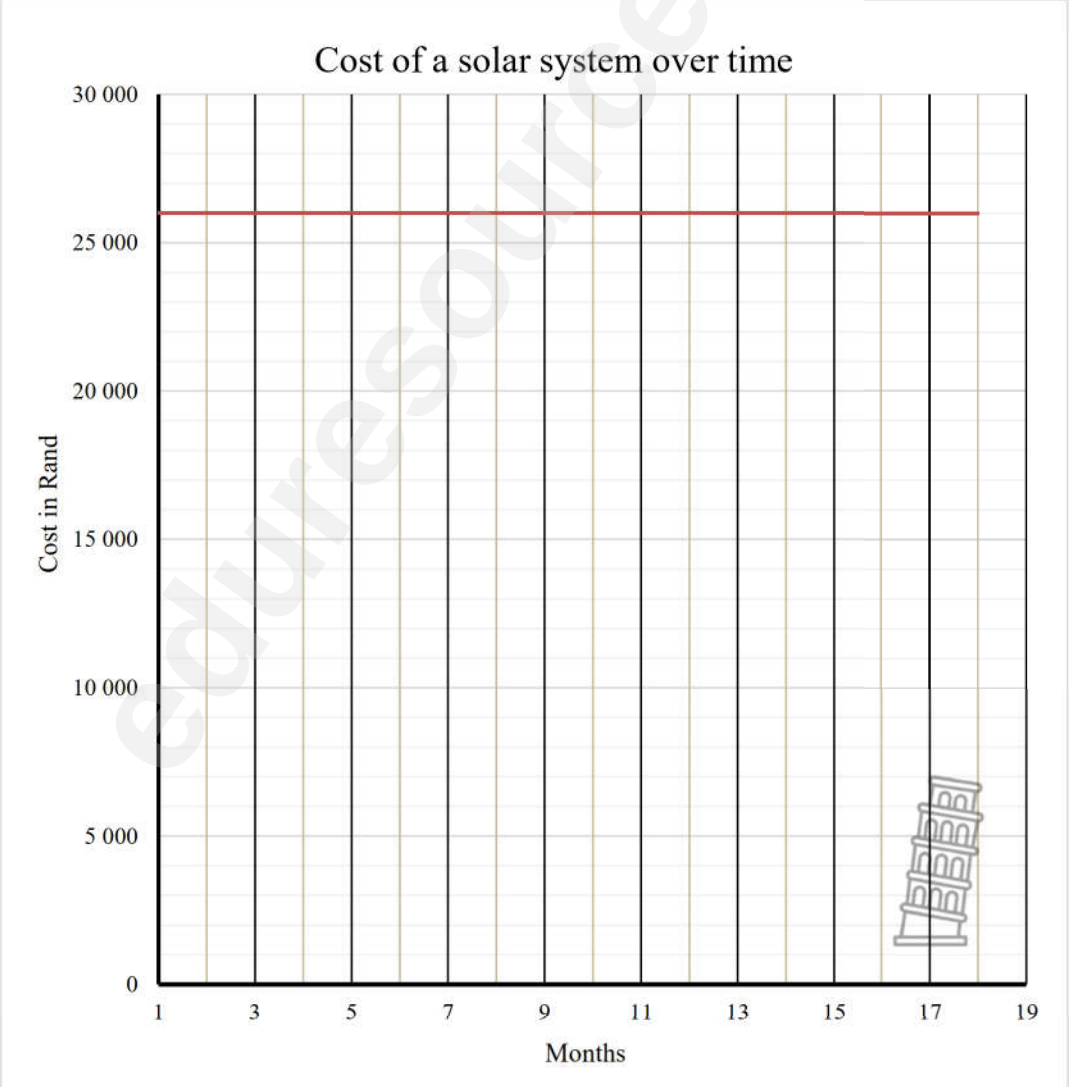
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ANSWER SHEET 1

NAME_____

QUESTION 2.3.1

CALCULATING F		CALCULATING G			CALCULATING H	
Month	1	5	6		15	18
Cost (R)		11 553,63	12 769,80	20 066,82	23 715,33	



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ANNEXURE A

QUESTION 1.1

TABLE 1: A COMPARISON OF PRICES FOR FOOD AND NON-FOOD ITEMS AT VARIOUS RETAILERS IN 2023.

Item	Woolworths	Spar	Premium store	Food Lovers	Checkers	PnP
FOOD ITEMS						
Baked beans	R14,99	R16,99	R11,99	R11,99	R10,99	R10,99
Tuna	R27,99	R19,99	R26,99	R18,99	R19,99	R19,99
Tomato sauce	R39,99	R28,99	R32,99	R26,99	R24,99	R24,99
Frozen mixed vegetables	R47,99	R43,99	R46,99	R39,99	R29,99	R34,99
Cooking oil	R89,99	R98,99	R94,99	R84,99	R89,99	R84,99
Chutney	R49,99	R28,99	R28,99	R47,99	R24,99	R24,99
White sugar	R49,99	R52,99	R51,99	R42,99	R49,99	R51,99
Apples	R36,99	R20,99	R34,99	R32,99	R34,99	R34,99
Cabbage	R19,99	R23,99	R19,99	R19,99	R19,99	R19,99
Long life milk	R109,99	R104,99	R94,99	R99,99	R94,99	R94,99
Food total	**R487,90**	**R440,90**	**R440,90**	**R426,90**	**R400,90**	**R402,90**
NON-FOOD ITEMS						
Dishwashing liquid	R34,99	R26,99	R23,99	R25,99	R24,99	R23,99
Refuse bag	R54,99	R53,99	R56,16	R39,99	R34,99	R41,99
Bleach	R23,99	R27,99	R18,99	R14,99	R14,99	R15,99
Toilet paper	R148,99	R129,99	R121,99	R119,99	R129,99	R121,99
All-purpose cleaner	R34,99	R24,99	R18,99	R19,99	R19,99	R21,99
Kitchen towels	R26,99	R27,99	R21,99	R22,99	R24,99	R21,99
Non-food total	**R324,94**	**R291,94**	**R262,11**	**R243,94**	**R249,94**	**R247,94**
Basket total	**R812,84**	**R732,84**	**R707,01**	**R670,84**	**R650,84**	**R650,84**

PLEASE NOTE: All products compared are the same size, mass, volume, or quantity.

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ANNEXURE B

QUESTION 2.1: BANK NOTIFICATION OF INCREASE IN MONTHLY INTEREST RATE.

INCREASE IN VARIABLE HOME LOAN INTEREST RATE

ORIGINAL LOAN AGREEMENT

Description	**Amount**
Total loan amount *(31 May 2021)*	R920 000
Initial loan interest rate: Home Loan rate	5,7%
Initial Basic repayment	R5 777,91

NEW REPAYMENT DETAILS

New yearly interest rate: Home Loan rate *(effective 1 May 2023)*	9,95%
Frequency of payment	Monthly
New total repayment made up as follows:	
- Basic repayment	R8 024,93
- Property insurance provision	R 369,40
- Administration/Service fee	R69,00
New total loan repayment	**R8 463,33**
Remaining loan term	28 years
Total interest payable over loan term.	R1 915 046,32

Due amount debit orders will adjust automatically. If you use any other payment type, please amend it accordingly.
Thank you for your continued support.
Yours faithfully

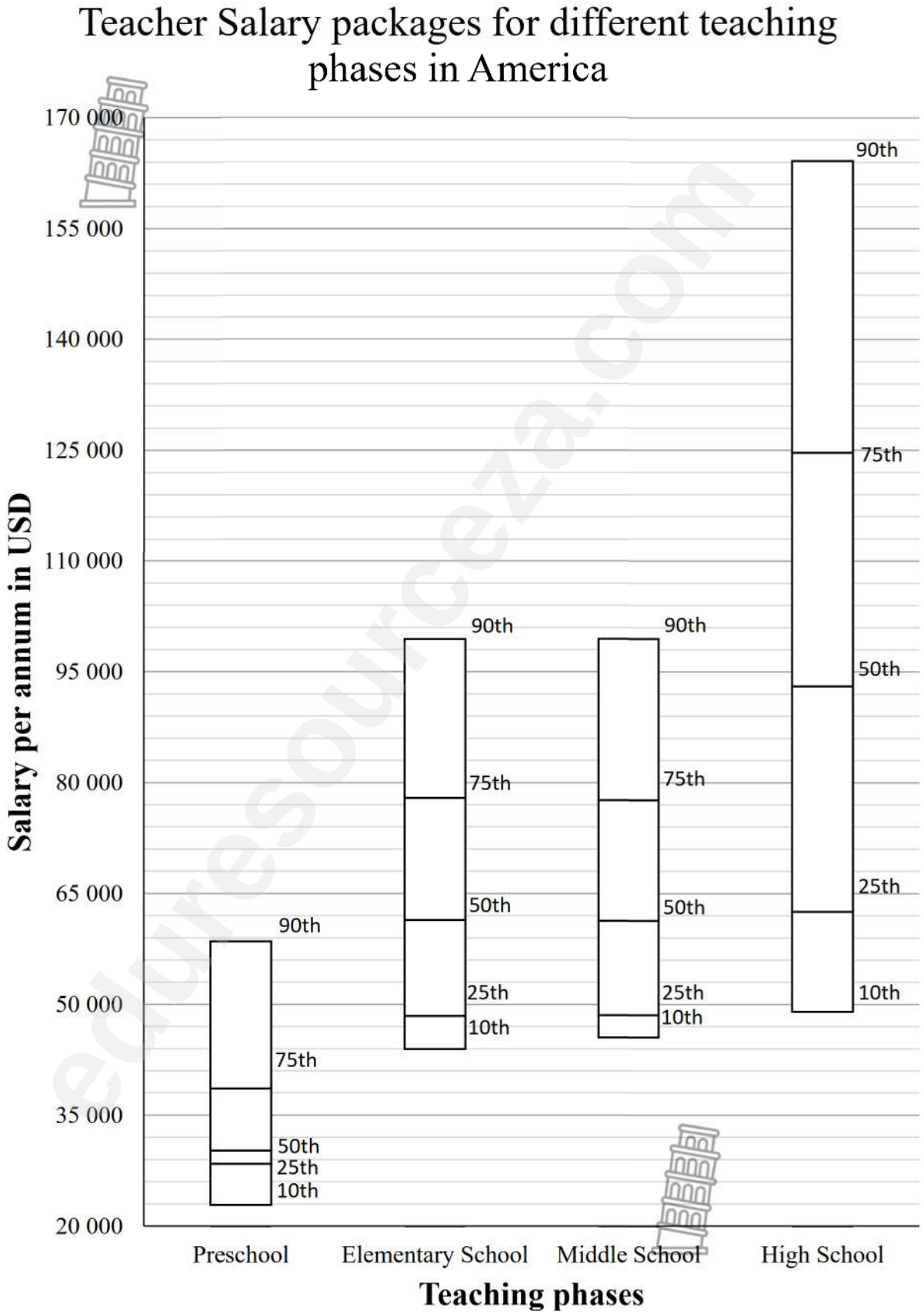


Manager

[Source: Adapted from ABSA home loan statement]

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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.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) pogin na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou by die tweede berekeningsfout op.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*

VRAAG 1/QUESTION 1 [30 MARKS]			
QUES	**SOLUTION**	**EXPLANATION/MARKS AO: FULL MARKS**	**T/L**
1.1.1	Food Lovers ✓✓RT	2RT correct shop (2)	F L1
1.1.2	The increase in the cost of goods over a period of time.✓✓A	2A correct explanation (2)	F L1
1.1.3	R29,99; R34,99; R39,99; R43,99; R46,99; R47,99✓✓A	2A correct order (2)	F L1
1.1.4	R487,90✓A + R324,94✓A = R812,84 **OR** R14,99 + R27,99 + R39,99 + R47,99 + R89,99 + R49,99 + R49,99 + R36,99 + R19,99 + R109,99 + R34,99 + R54,99 + R23,99 + R148,99 + R34,99 + R26,99✓✓A = R812,84	1A R487,90 1A adding R324,94 2A correct values add up to R812,84 (2)	F L1
1.1.5	R47,99 - R28,99✓RT = R19✓A	1RT correct values 1A R19 (2)	F L1
1.1.6	Cabbage✓✓RT	2RT correct food item (2)	F L1
1.2.1	Numerical✓✓A	2A Numerical (2)	D L1
1.2.2	R584,74✓✓A	2A median (2)	D L1
1.2.3	R650,84✓✓A	2A mode (2)	D L1
1.2.4	15,42%✓✓RT	2RT correct percentage (2)	D L1
1.2.5	$\frac{24}{100}$✓✓A **OR**	2A common fraction	D L1

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	$\frac{12}{50}$; $\frac{6}{25}$	(2)	
1.3.1	4,25%✓✓RT	2RT correct interest rate (2)	F L1
1.3.2	✓RT 2:3 ✓RT	2 RT ratio (2)	F L1
1.3.3	Water, Electricty, Refuse, Security Fee, Parking ✓✓A	2A any two (2)	F L1
1.3.4	20 000 × 12✓MA = R240 000✓A	1MA multiply with 12 1A answer (2)	F L1
			[30]

VRAAG 2/QUESTION 2 [34 MARKS]			
QUES	**SOLUTION**	**EXPLANATION**	**T/L**
2.1.1	It is money borrowed from the bank to buy a house or property. ✓✓ A	2A Correct explanation (2)	F L1
2.1.2	R 920 000 ✓✓ RT	2RT Correct amount R9200 (2)	F L1
2.1.3	✓MA 9,95% - 5,70% = 4,25% ✓CA	1MA subtracting correct amounts 1CA % increase (CA if at least one value correct) (2)	F L2
2.1.4	R920 000 + R1 915 046,32 ✓MA = R 2 835 046,32 ✓CA OR (R5 777,91 × 12 × 2) + (R8 024,93 ×12 ×28) ✓MA = R 2 835 046,32 ✓CA	**CA 2.1.2** 1 MA Adding Interest earned 1 CA 1 MA Multiplying correct values 1 CA (3)	F L2
2.1.5	Monthly interest is calculated and included in the final amount, ✓✓A	2A interest (2)	F L4
2.1.6	$\frac{R8\,024{,}93 - R5\,777{,}91}{R5\,777{,}91} \times 100$ ✓RT ✓MA $= \frac{R2\,247{,}02}{R5\,777.91} \times 100$ = 38,89% ✓CA ✓O	1 RT Basic repayments 1 MA calculating % difference 1 CA % difference	F L4

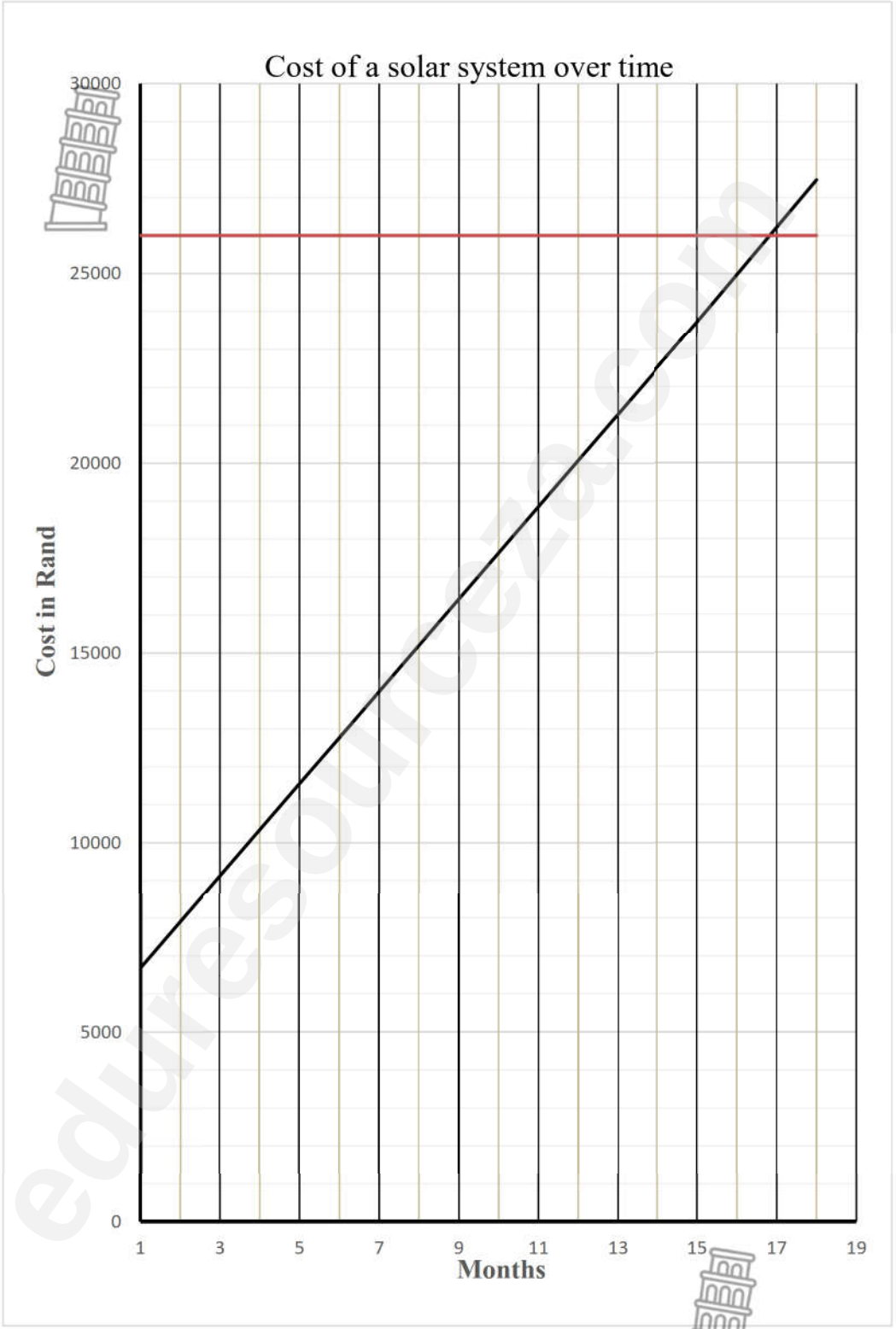
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	∴ Her statement is valid	1 O Valid/not valid (4)	
2.2	Agent commission: R1 800 000 × 6% = R 108 000 ✓A Total Municipal costs: R 800 ×12 × 2 = R19 200 ✓A ∴Profit: R1 800 000 – (R 920 000 + R15 000 + R6 000 + R 10 000 + R 13 000 + R 108 000 + R 19 200) ✓M = R 806 000 ✓M	1A Commission 1A Municipal costs 1M Subtracting all relevant values 1CA profit amount (4)	F L3
2.3.1	**ANSWER SHEET 1** Calculating F ✓MA ✓A $R5\,472{,}78 + R1\,216{,}17 = R6\,688{,}95$ Calculating G ✓M ✓A $\frac{R\,20\,066{,}82 - R5\,472{,}78}{R1\,216{,}17} = 12\ months$ Calculating H ✓M ✓CA $R5\,472{,}78 + (R1\,216{,}17 \times 18) = R27\,363{,}84$	1MA Adding correct values 1A payment month 1 1M Reverse calculation 1A Number of months 1M multiplying by 18 1CA repayment after 18 months (6)	F L2

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2.3.2	**ANSWER SHEET 1**  **CA from 2.3.1** 1A starting point 1A one other point on the graph correct 1A connected as a straight line (3)	F L2

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2.3.3	Installation time: 8h 45min + 5h 56min ✓MA = 14h 41 min ✓A ∴ Pays for 15 hours ✓R Total cost = (15×R102, 88) ✓MA + R14 300 + R27 363,84 = R1 543, 20 +R14 300 + R 27 363,84 ✓MCA = R43 207,04 ✓CA **OR** 9 ✓R ×R102,88 = R925,92✓MA 6 × R102,88 = R617,28 ✓MA Total Labour cost = R1 543,20 ✓A Total cost = R1 543,20 + R14 300 + R27 363,84 ✓MCA = R43 207,04 ✓CA	CA from 2.3.1 1MA adding times 1A time spent installing 1R rounding to whole hours 1MA multiplying with hours 1MCA adding all three values 1CA answer 1R rounding to whole hours 1MA Calculating day 1 1MACalculating day 2 1A time spent installing 1MCA adding all three values 1CA answer (6)	F L2

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VRAAG 3/QUESTION 3 [28 MARKS]			
QUES	**SOLUTION**	**EXPLANATION**	**T/L**
3.1.1	Coal ✓✓ RT	2RT Correct mineral (2)	D L1
3.1.2	% Platinum Group Metals $= \frac{30}{96}$ ✓RT $\times$ 100% ✓M % PGM = 31,25% ✓ CA % PGM = 31,3% ✓ R	1RT correct values 1M % calculation 1CA% PGM 1R Rounding (4)	D L2
3.1.3	$P_{dormant/closed} = \frac{120}{420}$ ✓RT ✓RT OR $P_{dormant/closed} = \frac{2}{7}$ ✓A✓A	1RT numerator 1RT denominator *No further marks for simplification* (2)	P L2

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QUES	SOLUTION	EXPLANATION	T/L
3.2.1	✓ MA $\frac{18599 + 92670 + 12900 + 93998 + 21427 + 13290 + 17953}{8}$ $= \frac{442405}{8}$ ✓ M = 55 300 OR 55 301 ✓ CA	1MA adding correct values 1M concept of mean 1CA mean value (3)	D L3
3.2.2	✓ M Range of Total Sales = R346 525 549 000 – R19 839 840 000 Range = R326 685 709 000 ✓CA	1M subtraction 1CA range (2)	D L2
3.2.3	Diamonds = R13 210 210 000 ✓A ✓A Thirteen Billion two hundred and ten million two hundred and ten thousand Rand	1A billion 1A million and hundred thousand (2)	D L1
3.2.4	19 839 840; 21 139 007; 21 974 540; 37 098 932; 102 209 471; 120 781 852; 150 098 372; 346 525 549 ✓M $Q_1 = \frac{21\,974\,540 + 21\,139\,007}{2}$ ✓ M Q_1 = R21 556 773 500 ✓A $Q_3 = \frac{120\,781\,852 + 150\,098\,372}{2}$ Q_3 = R135 440 112 000 ✓A ∴ IQR = Q3 – Q1 ✓ MCA IQR = R135 440 112 000 – R21 556 773 500 IQR = R113 883 338 500 ✓CA ∴ Yes, his statement was valid. ✓O	1M arranging 1M concept Q_1 or Q_3 1A Q_1 1A Q_3 1MCA concept of Q_3 - Q_1 1CA IQR value 1O conclusion *If learners arranged values in 3.2.2, allocate the arranging mark in 3.2.3* (7)	D L4

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3.2.5	✓ O The table only indicates a selected group of metals/minerals where the Total row includes all of metals/minerals mined in South Africa. ✓O	1O selected groups 1O all metals/minerals (2)	D L4
3.2.6	✓M Total Local Sales = R849 633 717 000 – R682 082 493 000 Total Local Sales = R167 550 678 000 ✓CA	1M subtraction 1CA Total local sales (2)	D L1
3.2.7	$P_{>21\ 500} = \frac{3}{8}$ ✓RT $P_{>21\ 500} = 0{,}375$ ✓A	1RT correct values 1A Decimal **NPR** (2)	P L2
		[28]	

VRAAG 4/QUESTION 4 [31 MARKS]

QUES	SOLUTION	EXPLANATION	T/L
4.1.1	General Hospitals ✓✓ RT	2RT identifying correct subprogramme from table. (2)	F L1
4.1.2	✓A $\frac{1}{5} \times 100 = 20\%$ ✓CA ✓ A	1 A numerator 1A denominator 1 CA solution as percentage **NPR** (3)	P L2
4.1.3	36 431 - (28343 + 61 581 + 69 788 + 12 369) =36 431 - 172081 ✓MA = - 135 650 ✓A (135 650) **OR** 7 279 341 - 7 414 991 = - 135 650 (135 650)	1 MA subtracting all values from total 1 A value of A *Learners must either write as a negative amount or in brackets.* (2)	F L 2
4.1.4	✓RT R98 272 thousand – R96 051 thousand ✓M = R2 221 thousand ✓CA **OR** ✓RT ✓M R98 272 000 – R96 051 000 = R2 221 000 ✓CA	1RT both values 1 M difference between values 1 CA final answer in Rands **NP for omitting thousands** (3)	F L2
4.2.1	**PawPaw A:** 15% + 25% = 40% ✓A ✓MA	1 A adding percentages 1 MA calculating percentage of claim amount	F L3

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	$\frac{40}{100} \times R\ 17\ 000$ =R6 800 ✓CA **PawPaw B:** $\frac{20}{100} \times R\ 17\ 000$ $= R\ 3\ 400$ ✓A $R\ 3\ 400 + R\ 1\ 000$ ✓MA =R4 400 ✓CA R 6 800 – R 4 400 ✓MCA = R2 400 ✓CA	1 CA value for PawPaw A 1 A excess claim for PawPaw B 1 MA adding flat excess 1 CA value for PawPaw B 1MCA Subtracting values for A and B 1 CA final value of difference (8)	
4.2.2	To ensure that animals with pre-exisiting conditions do not try and claim within the first 30 days ✓✓ O Any other valid reason.	2 O Reasonable explanation for the waiting period. (2)	F L4
4.3.1	Median ✓✓A	2 A identifying correct measure of central tendency. (2)	D L1
4.3.2	10 percent of teachers earn the same or less than that teacher, ✓✓O **OR** 90 percent of teachers earn the same or more than that teacher. ✓✓O	2 O explanation of 10th percentile (2)	D L1
4.3.3	Accept range: 60 000 – 62 000 and 30 000 – 32 000 ✓RG ✓MA $61 400 – $30 210 = $31 190 ✓CA $31 190 ÷0,056 ✓MCA = R 556 964,29 R556 964,29 ÷12 ✓MCA = R46 413,69 ✓CA **OR** Currency conversion first ∴The statement is valid. ✓O	1 RG correct values from graph 1 MA subtracting correct values 1 CA annual difference 1 MCA converting to Rand 1 MCA determining monthly amount 1 CA monthly amount in Rand 1 O (7)	F L4

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			[31]





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VRAAG 5/QUESTION 5 [27 MARKS]			
QUES	**SOLUTION**	**EXPLANATION**	**T/L**
5.1.1	R12 375 +6% of the value above R1 512 500 ✓✓RT	2 RT (2)	F L2
5.1.2	R97 075 + (R2 850 000 – R 2 722 500) × 11% ✓RT = R97 075 + R 127 500 × 11% ✓S = R 97 075 + R 14 025 = R 111 100 ✓CA	1 SF 1 S 1 CA (3)	F L3
5.1.3	The type of ground/ rainfall/ availability of water/resale value ✓✓O	2 O (2)	F L4
5.2.1	✓RT 21 000; 44 000;64 000;72 000; 102 000; 105 000; 116 000; 204 000; 255 000 ✓A Median = 102 000 ✓A	1 RT correct values 1 A correct order 1 CA median of organized values (3)	D L2
5.2.2	✓MA 255 000-21 000 =234 000✓A	CA from 5.2.1 1MA concept of range 1 A value (2)	D L2
5.2.3	6% = 21 000 ✓A ✓M $\frac{100}{6} \times 21\,000$ = 350 000 ✓CA	1 A 100/6 1 M calculating percentage of 21 000 1 CA value (3)	D L2
5.2.4	7,9+3,7+5,8+6,1+7,8+5,1+3,8+4,5+6,0 ✓MA $\frac{50,7}{9}$ ✓M =5,63% ✓CA ∴It is valid ✓O	1 MA adding % values correctly 1 M concept of mean 1 CA mean value 1 O valid/ Invalid (4)	D L4
5.2.5	Western Cape has a higher percentage of households affected. ✓✓O **OR** Even though Western Cape has a higher percentage of breakings, Gauteng has a high number of breakings. ✓✓O	2 O Any valid opinion (2)	D L4
5.3.1	✓RT 600kWh × 267,38c = 160 428c ✓CA 900kWh × 288,24c = 259 416 c ✓CA Increase : ✓MA 259 416 c – 160 428 c	1 RT correct tariff 1 A cost of 600 kWh 1 CA Cost of 900 kWh 1MA calculating increase	F L3

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	= 98 988c ✓CA Increase in rands: 98 988c ÷ 100 = R 989,88 ✓C	1CA increase 1C converting to Rands (6)	
		[27]	
		TOTAL: [150]	

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KWAZULU-NATAL PROVINCE

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NATIONAL SENIOR CERTIFICATE

GRADE 12



MATHEMATICAL LITERACY P1

PREPARATORY EXAMINATION

SEPTEMBER 2022

MARKS: 150

TIME: 3 hours

This question paper consists of 14 pages including 1 answer sheet and an Addendum with 1 Annexure.

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INSTRUCTIONS AND INFORMATION

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

2. 2.1 Use ANNEXURE A in the ADDENDUM to answer QUESTION 2.2.

   2.2 Answer QUESTION 5.1.2. on the attached ANSWER SHEET.

   2.3 Write your name in the spaces provided on the ANSWER SHEET. Hand in the ANSWER SHEET with your ANSWER BOOK.

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. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.

10. Write neatly and legibly.

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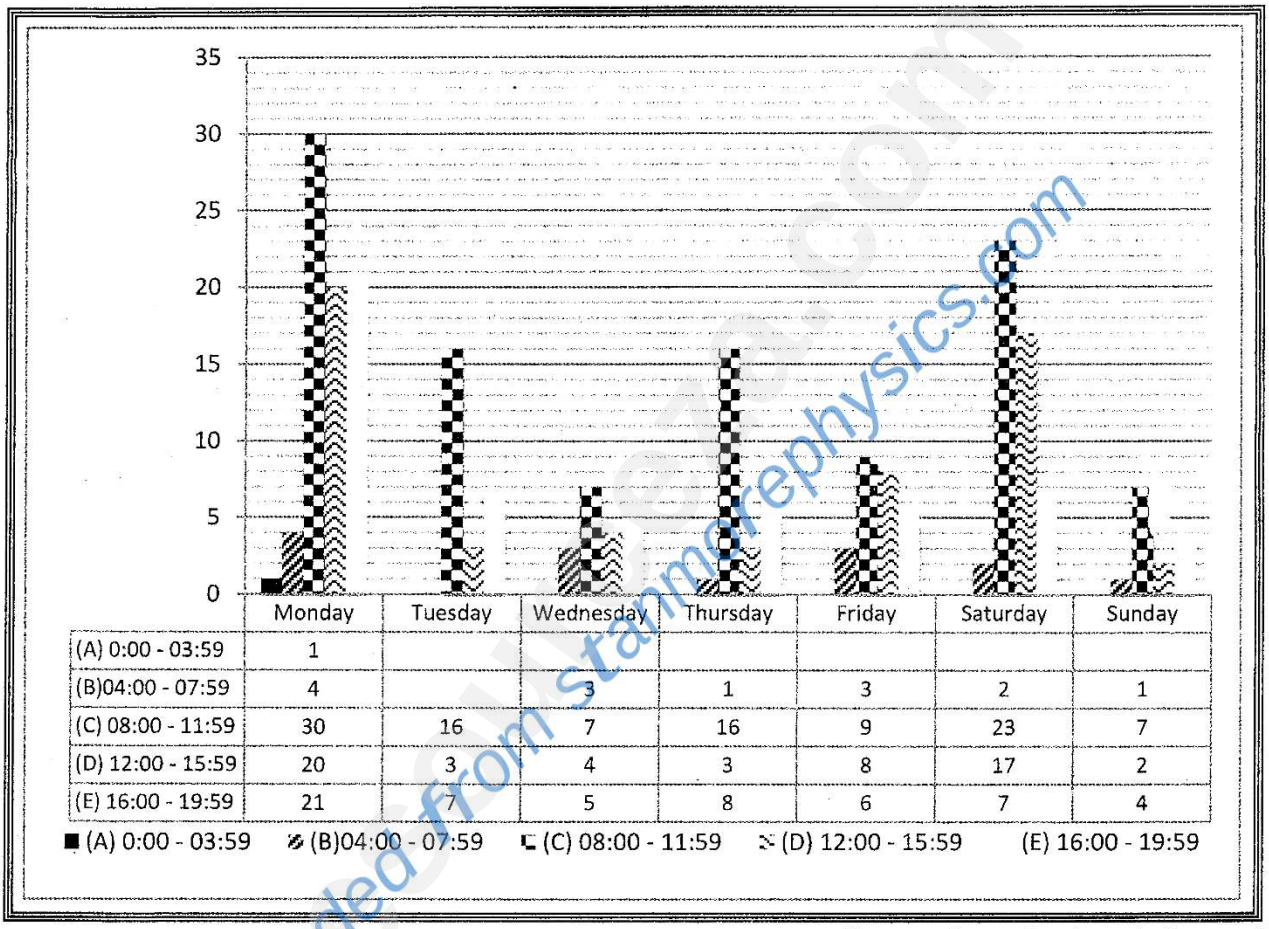
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QUESTION 1

1. Cash-in-transit robberies are a serious problem in South Africa. The graph below shows the days and times when robberies are committed.

ROBBERY OF CASH-IN-TRANSIT: DAYS AND TIMES OF THE WEEK



	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
(A) 0:00 - 03:59	1						
(B)04:00 - 07:59	4		3	1	3	2	1
(C) 08:00 - 11:59	30	16	7	16	9	23	7
(D) 12:00 - 15:59	20	3	4	3	8	17	2
(E) 16:00 - 19:59	21	7	5	8	6	7	4

Source: [www.businesstech.co.za]

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

1.1.1 Identify which day of the week had the greatest number of robberies. (2)

1.1.2 Calculate the total number of robberies that occurred on Saturday. (2)

1.1.3 Determine how many robberies occurred from 8:00 – 11:59 on Thursday. (2)

1.1.4 Calculate the difference between the highest and the lowest number of robberies that occurred on a Monday. (2)

1.1.5 Write down the time interval that had the highest number of robberies throughout the week. (2)

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1.2 The School Governing Body of Green Fields High School approved 2022 annual school fees of R17 500 which includes a 10% increase from 2021 school fees. If the annual fees are paid by March 2022 there will be a discount equivalent to the percentage increase in the school fees.

Use the information above to answer the questions that follow.

1.2.1 Write down the percentage discount given to those who fully paid the school fees in March. (2)

1.2.2 Calculate the annual school fees for 2021 rounded off to the nearest R1. (2)

1.2.3 Lerumo's parents chose the ten equal monthly payments option in 2022. Calculate their monthly payment. (2)

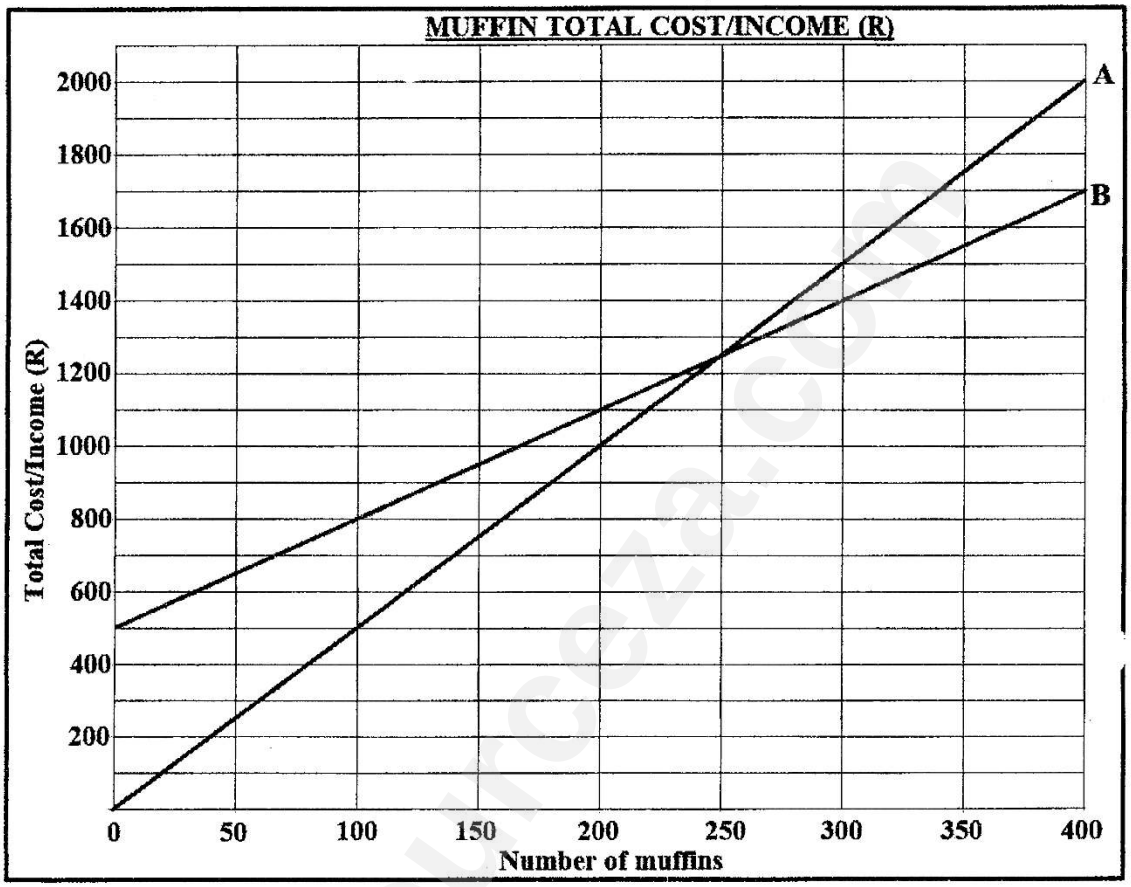
1.2.4 If the 2021 school fees was R15 909 and increased to R17 500 in 2022, calculate the increase in the school fees. (2)

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1.3 Green Fields High School Matric Dance Committee bakes and sells muffins to raise funds for the matric dance. Given below is the graph for total cost and total income for the muffins.



Use the graph above to answer the questions that follow.

1.3.1 Explain the meaning of the word "*total cost*" in the context above. (2)

1.3.2 State what each of the line graphs **A** and **B** represent. (2)

1.3.3 Write down the fixed cost. (2)

1.3.4 Determine the cost for baking 300 muffins. (2)

1.3.5 Calculate the selling price for each muffin. (2)

1.3.6 Write down the number of muffins to be sold to break-even. (2)

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QUESTION 2

2.1 Umlalazi Municipality published the financial statements for 2020 and 2021 for the different votes or departments labelled Vote 1 to Vote 13 as shown in TABLE 1 below.

TABLE 1: FINANCIAL PERFORMANCE OF DEPARTMENTS/VOTES

VOTE	2020		2021	
	REVENUE R thousands	EXPENDITURE R thousands	REVENUE R thousands	EXPENDITURE R thousands
Vote 1	204 409	78 556	156 335	28 211
Vote 2	66 587	50 753	47 441	27 564
Vote 3	-	2 595	-	1 236
Vote 4	5 290	17 659	151	9 310
Vote 5	26	16 982	20	9 515
Vote 6	3	11 932	2	6 120
Vote 7	37 687	39 052	37 830	38 515
Vote 8	2 765	12 125	1 685	8 013
Vote 9	39 666	101 502	15 866	51 716
Vote 10	15 532	27 294	8 207	13 299
Vote 11	78 899	81 680	37 022	38 481
Vote 12	-	4	-	0
Vote 13	-	365	-	9
TOTAL	**450 864**	-		
SURPLUS/DEFICIT	**10 365**		**C**	

[Adapted from www.umlalazi.gov.za]

Study TABLE 1 above and answer the questions that follow.

2.1.1 Explain the term *"surplus"* in this context. (2)

2.1.2 Show how the 2020 surplus of R10 365 was calculated. (3)

2.1.3 One councillor stated that the percentage difference in the expenditure for Vote 13 from 2020 to 2021, was greater than –29%. Use calculations to verify the statement.

You may use the formula:

$$\% \text{ difference} = \frac{\text{2021 expenditure} - \text{2020 expenditure}}{\text{2020 expenditure}} \times 100\% \quad (4)$$

2.1.4 If a vote is picked at random, what is the probability that its expenditure for 2021 is greater than R27 000 000? Write your answer as a percentage. (3)

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2.2 Dream Big High School received an electricity account statement for the school from uMlalazi Municipality. ANNEXURE A is an extract of the account statement with some values and amounts left out.

Use ANNEXURE A to answer the following questions.

2.2.1 Explain the term *"opening balance"* in this context. (2)

2.2.2 Show, using the meter readings that the value of **D** is 15 012. (2)

2.2.3 Calculate the missing value **E**. (2)

2.2.4 Use calculations to verify if the VAT amount of R4 374,81 was calculated correctly. (4)

2.3 Mr Mdletshe is 68-year-old businessman, married with three grand children who are also covered by his medical aid. As a company director, Mdletshe earns a monthly income of R42 000 and donates R2 500 every month to a local Orphanage. TABLE 2 below shows Individual Income Tax Rates for 2022.

N.B: Donations by natural persons not exceeding R100 000 are allowable tax ded ..ions.

TABLE 2: INDIVIDUAL INCOME TAX RATES – 2022

Taxable income (R)	**Rates of tax (R)**
1 – 226 000	18% of taxable income
226 001 – 353 100	40 680 + 26% of taxable income above 226 000
353 101 – 488 700	73 726 + 31% of taxable income above 353 100
488 701 – 641 400	115 762 + 36% of taxable income above 488 700
641 401 – 817 600	170 734 + 39% of taxable income above 641 400
817 601 – 1 731 600	239 452 + 41% of taxable income above 817 600
1 731 601 and above	614 192 + 45%% of taxable income above 1 731 600
Rebates	
Primary Rebate (Persons under 65)	R15 714
Secondary Rebate (Persons 65 and under 75)	R24 327
Tertiary Rebate (Persons 75 and over)	R27 198
Medical Aid Tax Credits	
Main member	R332
First dependant	R332
For each additional dependant	R224

[Adapted from www.sars.gov.za]

Use TABLE 2 and the information above to answer the questions that follow.

2.3.1 Calculate:

(a) Mdletshe's annual taxable income. (3)

(b) annual medical tax credits. (4)

2.3.2 Mr Mdletshe claims that his tax is not more than R4 500. Verify his claim. (9)

[38]

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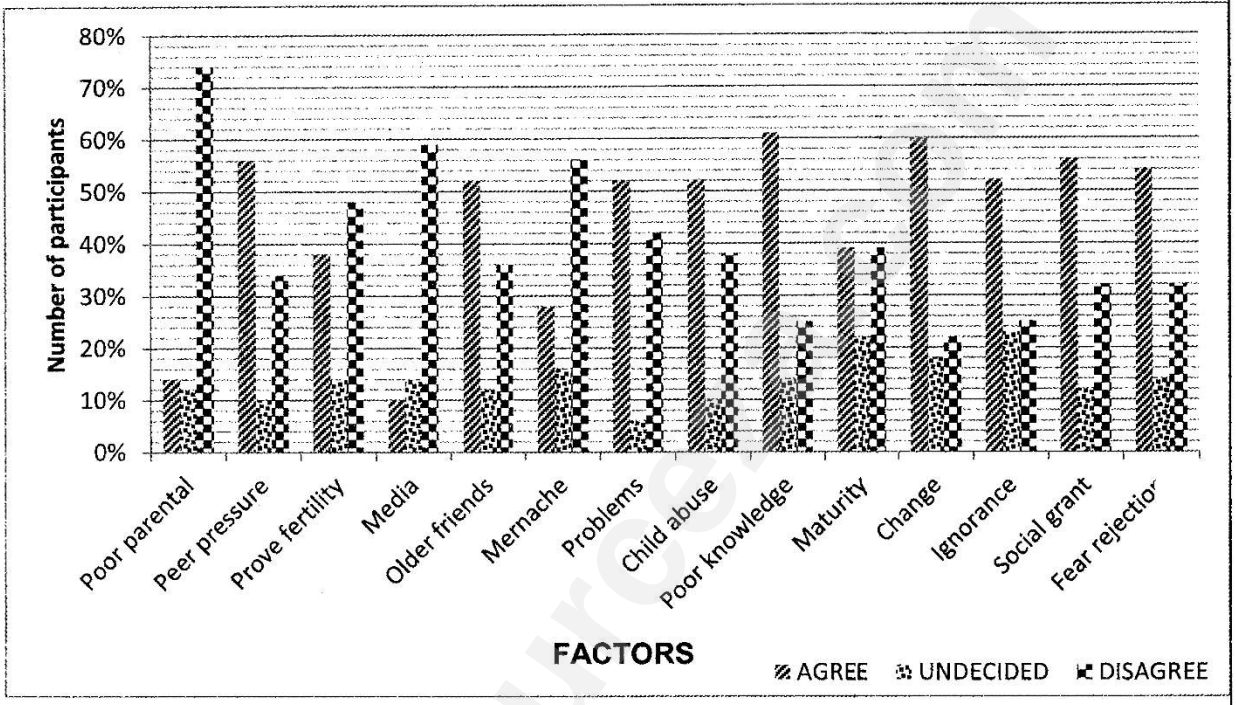
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QUESTION 3

3.1 A survey was conducted to try and identify factors that influenced adolescent pregnancy rate in the Greater Giyane Municipality, Limpopo Province. The results are shown in the graph below.

FACTORS INFLUENCING ADOLESCENT PREGNANCY IN GREATER GIYANE



[Adapted from www.sciencedirect.com]

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

3.1.1 Define the term '*mode*' in this context. (2)

3.1.2 State whether the data shown above is discrete or continuous. (2)

3.1.3 Identify the type of graph shown and state one possible reason why the graph was chosen to display the data. (2)

3.1.4 Which factor has the greatest influence on adolescent pregnancy in Greater Giyane? (2)

3.1.5 If the data was collected from a sample of 150 girls from 4 schools, calculate the number of girls who disagreed with "poor parental" as a factor. (2)

3.1.6 Give one disadvantage of the mean. (2)

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3.2 TABLE 3 below shows the 2020 and 2021 matric results for each of the nine provinces in South Africa.

TABLE 3: PROVINCIAL MATRIC PASS RATES FOR 2020 AND 2021

PROVINCES	PASS RATE IN YEARS		
	2020	2021	PERCENTAGE DIFFERENCE
FREE STATE	85,1%	85,7%	0,6%
GAUTENG	83,3%	82,8%	-0,5%
WESTERN CAPE	79,9%	81,2%	1,3%
NORTH WEST	76,2%	78,2%	2,0%
KWAZULU-NATAL	77,6%	76,8%	**F**
MPUMALANGA	73,7%	73,6%	-0,1%
EASTERN CAPE	68,1%	73,0%	4,9%
NORTHERN CAPE	66,0%	71,4%	5,4%
LIMPOPO	68,2%	66,7%	-1,5%

[Adapted from www.insideeducation.co.za]

Use the information and the TABLE 3 above to answer the questions that follow.

3.2.1 Calculate the missing value **F**. (2)

3.2.2 Determine the median percentage difference. (3)

3.2.3 Calculate the country's mean percentage pass rate for 2021. (4)

[21]

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QUESTION 4

4.1

In the Zulu culture the bride groom is expected to pay lobola by sending 11 cows to the bride's family. Siyacela invested R60 000 at the end of December 2018 at 9,8% per annum simple interest to raise money for lobola.

He hopes to pay lobola end of December 2024. On average the current (2022) cost of a lean cow is R8 500. The projected livestock inflation rates for 2023 and 2024 are 11,8% and 9% respectively.



[Adapted from www.ultralyx.com]

Use the given information above to answer the questions that follow.

4.1.1 Calculate manually the total interest earned on the investment will be at the end of 2024. (4)

4.1.2 Use the projected livestock inflation rates to calculate the cost of each lean cow in 2024. (7)

4.1.3 Show with calculations whether Siyacela will have enough money to buy the 11 cows in 2024. (5)

4.1.4 Siyacela's sister wants to donate $1 450 to assist him with lobola. This amount is equivalent to R21 117,51. Determine the exchange rate in the form: **$1 = R ...** (2)

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4.2 People prefer to buy lean cows because they are cheaper. The buyer will have to feed them for a certain period of time. The frequency table below shows the masses of lean cows in a nearby cattle farm.

TABLE 4: MASSES OF LEAN COWS IN KILOGRAMS

INTERVAL (KG)	FREQUENCY	CUMULATIVE FREQUENCY
220 – 229	15	15
210 – 219	28	43
200 – 209	9	52
190 – 199	12	64
180 – 189	7	71
170 – 179	10	81
160 – 169	20	101
159 – 159	7	108
140 – 149	11	119
130 – 139	4	123
120 – 129	2	125

Use the TABLE 4 above to answer the following questions.

4.2.1 Which statistical cycle stage is shown by the table above? (2)

4.2.2 Determine the number of cows that weighed less than 170 kg. (2)

4.2.3 Calculate the percentage of cows that weigh more than 180 kg. (3)

4.3 The two-way table below shows the Mathematical Literacy test results from 1 550 learners in one of the districts in KZN.

TABLE 5: MATHEMATICAL LITERACY TEST RESULTS

	PASS	FAIL	TOTALS
BOYS	350	**G**	460
GIRLS	820	270	**H**
TOTALS	1 170	380	1 550

Use TABLE 5 above to answer the questions that follow.

4.3.1 Calculate the missing values of **G** and **H**. (4)

4.3.2 Use the two-way table above to determine the probability that a learner chosen at random is a boy that passed the test. Write the answer as a fraction in its simplest form. (3)

[32]

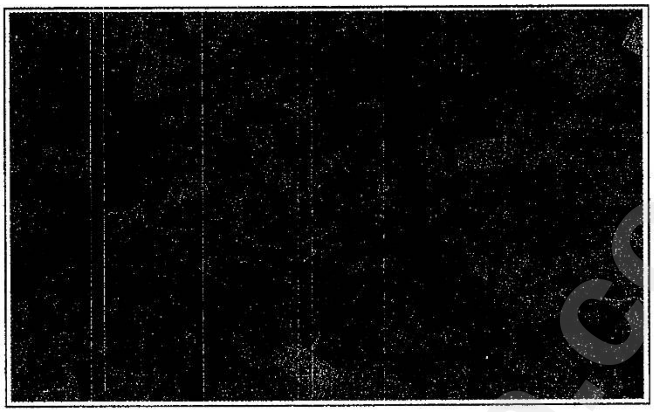
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QUESTION 5

5.1 Nomsa grows and sells amadumbe (yams) to raise extra cash to support her family. She sells amadumbe in 5 kg packs for R30 per pack. Each empty red mesh bag costs her R5. The total fix cost is R500 per month excluding the red mesh bags.





Use the information above to answer the questions that follow.

5.1.1 The formula below is used to calculate Nomsa's total cost for the month.

Total Cost (R) = R500 + R5 × number of mesh bags

TABLE 3: TOTAL COST/INCOME FOR AMADUMBE PACKS

NUMBER OF AMADUMBE PACKS	0	20	40	Q	80
TOTAL COST (R)	500	P	700	825	900
TOTAL INCOME (R)	0	600	1 200	1 950	2400

(4)

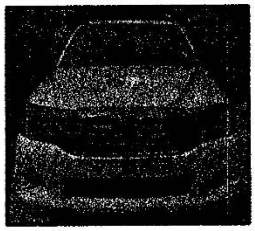
Use the given formula above to calculate the values of **P** and **Q**.

5.1.2 The graph for total cost is drawn on the ANSWER SHEET provided. On the same set of axes draw the graph for total income. (4)

5.1.3 Explain the importance of understanding the break-even point in the given context. (2)

5.2 Nomsa wants to buy a used bakkie. She viewed an Autotrader on the internet as shown below.

Retail price: R150 000
Deposit: R30 000
Repayment period: 6 years
Monthly instalment: R2 208,00
Estimated interest rate: 9,75% p.a



[Adapted from www.autotrader.co.za]

5.2.1 Calculate the real cost of the loan.
You may use the formula:

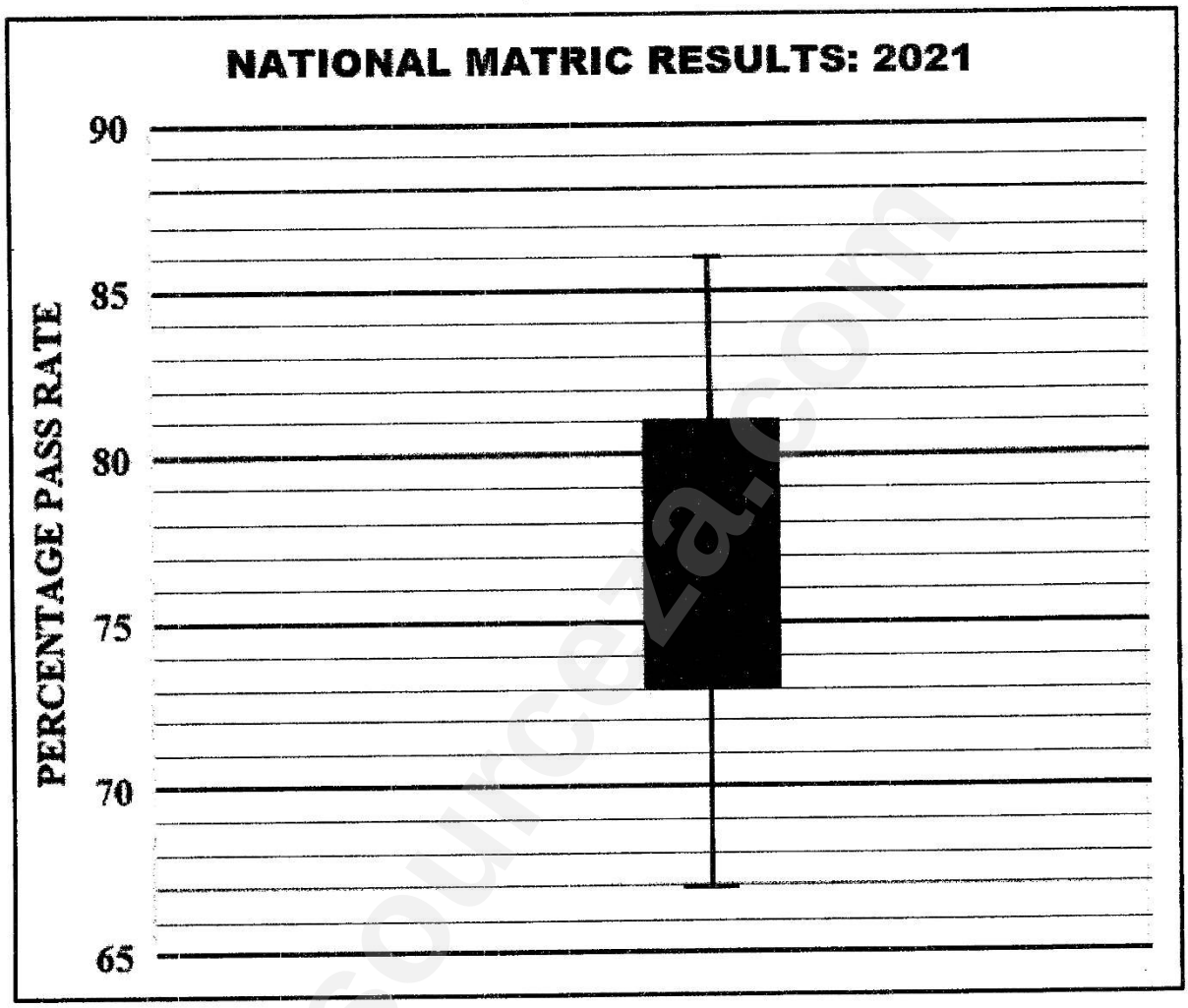
Real cost of the loan = monthly repayment × total number of months. (3)

5.2.2 Show how the total interest of **R38 976,00** was calculated. (4)

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5.3 The box-and-whisker plot below shows the 2021 matric pass rates for the nine provinces rounded off to the nearest whole numbers.



[Adapted from www.careersportal.co.za]

Use the box-and-whisker plot and the information above to answer the following questions.

5.3.1 Write down the minimum and maximum pass rates. (2)

5.3.2 One Mathematical Literacy learner stated that the difference between the range and the Inter-Quartile Range (IQR) is 12%. Verify, using calculations whether the statement is correct.

You may use the formula: $\mathbf{IQR = Q_3 - Q_1}$ (6)

5.3.3 Free State Province had the highest pass rate for 2021 matric results. If 35 055 Grade 12 learners wrote, calculate the number of learners who failed. (4)

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TOTAL MARKS: 150

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KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA



NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

ADDENDUM

PREPARATORY EXAMINATION

SEPTEMBER 2022

This Addendum consists of 2 pages with 1 Annexure.

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ANNEXURE A

QUESTION 2.2

UMLALAZI MUNICIPALITY
VAT REG. No..: 4170193181
P O BOX 37, ESHOWE, 3815
ESHOWE

uMLALAZI MUNICIPALITY

CONTACT: ESHOWE: (035) 473 3300
MTUNZINI: (035) 473 3460
GINGINDLOVU: (035) 473 3470

FAX: (035) 474 4733

ACCOUNT NUMBER:	000002112519
INVOICE DATE:	20220510
INDIGENT DATE:	0
NOTIFIED DEMAND:	84

STREET ADDRESS/STAND
KANGELA STREET ESHOWE 81
P O BOX 37
ESHOWE

TAX INVOICE STATEMENT

VAT REFERENCE: 0 **METER READING**

METER TYPE	METER No.	OLD READING	NEW READING	CONSUMPTION	READING DATE
kVA	E6420079	0	73	73	20220419
kWh	K6420079	959619	974631	**D**	20220419

ACCOUNT DETAILS

DATE	CODE	DESCRIPTION	UNITS	TARIFF (in Rand) **15% VAT** Inclusive	VALUE (in Rand) **15% VAT** Inclusive
20220419		**OPENING BALANCE**	0	.00000	**36 927,84**
20220419	E311	R: ER-SG-Electricity-ES-Industry	73	228,45507	16 677,22
20220419	E310	R: ER-SG-Electricity-ES-Industry	**D**	R0.91965	13 805,86
20220419	ECAP	R: ER-SG-Electricity-ES-Industry	0	.00000	555,86
20220419	R440	R: ER-SG-Electricity-ES-Industry	0	217.50000	2 501,25
20220503		**PAYMENT VB0620T**	0	.00000	**-36 927,84**

120 DAYS+	90 DAYS	60 DAYS	30 DAYS	CURRENT	VAT	TOTAL DUE
.00	.00	.00	.00	**E**	4 374,81	**F**
New tariffs implemented with effect from 01 July 2017			**DUE DATE**		**RECEIPT UP TO**	
			20220531		20220430	
Banking details: FNB, ACCOUNT NUMBER: 52191999999						

*Accounts unpaid on the date payable are subject to interest charged at a standard rate of 10% per annum, compounded monthly and services will be suspended. Please notify the municipality in writing of the termination of any services, in order to avoid being held responsible for any costs.

- kWh (kilowatt hour) is the unit of three-phase electricity.
- kVA (kilovolt-ampere) is the unit for transformer electricity.

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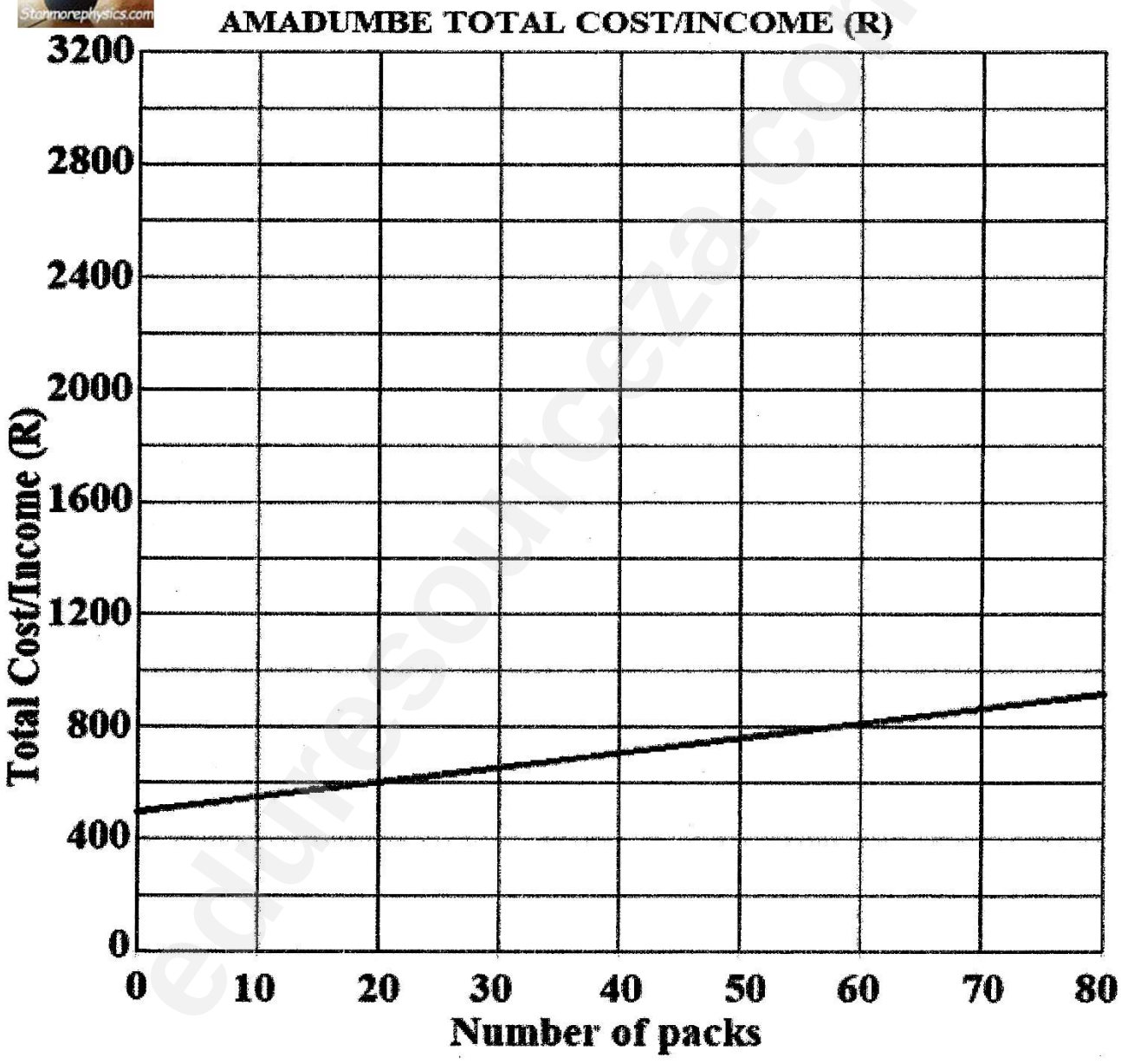
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ANSWER SHEET

QUESTION 5.1.2

NAME OF LEARNER: _____ **GRADE 12**_____





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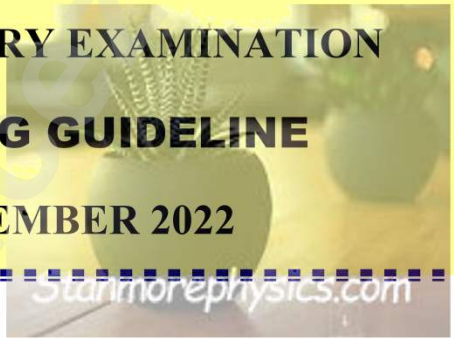
GRADE 12

MATHEMATICAL LITERACY P1

PREPARATORY EXAMINATION

MARKING GUIDELINE

SEPTEMBER 2022



MARKS: 150

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA/MCA	Consistent accuracy/ Method with Consistency 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

This marking guideline consists of 9 pages.

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QUESTION 1 [30 MARKS] (Answer Only (AO) Full marks)			
Ques	**Solution**	**Explanation**	**T & L**
1.1.1	Monday✓✓RT	2RT correct answer (2)	DH L1
1.1.2	Total = 2 + 23 + 17 + 7✓MA = 49✓A	1MA adding all correct values 1A correct answer (2)	DH L1
1.1.3	16✓✓ RT / RG	2RT/RG Correct answer (2)	DH L1
1.1.4	range = 30 − 1✓M = 29✓A	1M Subtraction 1A Correct answer (2)	DH L1
1.1.5	08: 00 − 11: 59✓✓RT **OR** C✓✓RT	2RT Correct amount (2)	DH L1
1.2.1	10%✓✓A	2A Correct percentage (2)	F L1
1.2.2	2021 fees = R17 500 ÷ 110%✓M = R15 909✓A **OR** 2021 fees = R17 500 × 100 ÷ 110✓M = R15 909✓A **OR** 2021 fees = R17 500 ÷ 1,10✓M = R15 909✓A	1M dividing by 110% 1A Correct answer **OR** 1M multiplying by 100 and dividing by 110 1A Correct answer **OR** 1M dividing by 1,10 1A Correct answer (2)	F L1
1.2.3	Monthly payment = R17 500 ÷ 10✓M = R1 750✓A	**CA from 1.2.2** 1M dividing by 10 1A Correct answer (2)	F L2
1.2.4	Annual increase = R17 500 − R15 909✓M = R1 591✓A	1M Subtraction 1A Correct answer (2)	F L1
1.3.1	All expenses including fixed costs incurred in baking muffins✓✓O	2O explanation (2)	F L1
1.3.2	A is the graph for Total Income✓A B is the graph for Total Cost✓A	1A Total Income 1A Total Cost (2)	F L1
1.3.3	R500✓✓RG	2RG Correct answer (2)	F L1
1.3.4	Cost of baking 300 muffins: = R1500 ✓✓RG	2RG Correct value (2)	F L1
1.3.5	Selling Price = R500 ÷ 100✓M = R5✓A	1M dividing by 100 1A Correct answer (2)	F L1
1.3.6	250 muffins✓✓RG	2RG Correct answer	F

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		(2)	L1
		[30]	

QUESTION 2 [38 MARKS]			
Ques	**Solution**	**Explanation**	**T & L**
2.1.1	Money left after expenses have been paid✓✓O	2O explanation (2)	F L1
2.1.2	Total Expenditure = 78 556 + 50 753 + 2 595 + 17 659 + 16 982 + 11 932 + 39 052 + 12 125 + 101 502 + 27 294 + 81 680 + 4 + 365✓M = 440 499✓A difference = 450 864 − 440 499✓M = 10 365	2M adding expenses 1A Correct answer 1M subtracting **NPR** (3)	F L3
2.1.3	% difference = $\frac{259 - 365✓RT}{365} \times 100\%✓SF$ = −29,04%✓A The claim is NOT true✓O	1RT Correct values 1SF substitution 1A Correct answer 1O (4)	F L4
2.1.4	$\frac{5✓A}{13✓A} \times 100 = 38,46\%✓CA$	1A numerator 1A denominator 1CA Correct percentage **NPR** (3)	P L2
2.2.1	Amount owed by the school for electricity brought forward at the start of the account period✓✓O	2O explanation (2)	F L1
2.2.2	✓RT ✓M A = 974 631 − 959 619 = 15 012	1RT both correct values 1M for subtraction (2)	F L1
2.2.3	B = R16 677,22 + R13 805,86 + R555,86 + R2 501,25✓M = R33 540,19✓A	1M for adding 1A Correct answer (2)	F L2
2.2.4	VAT exclusive amount = R33 540,19 ÷ 1,15✓M = R29 165,38✓CA **OR** VAT exclusive amount = R33 540,19 × 100 ÷ 115✓M = R29 165,38✓CA **OR** VAT exclusive amount = R33 540,19 ÷ 115%✓M = R29 165,38✓CA	**CA from 2.2.3** 1M dividing by 1,15 1A Correct answer 1M dividing by 115 1A Correct answer 1M dividing by 1,15 1A Correct answer	F

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	VAT exclusive amount= R33 540,19 ×(15÷ 115) ✓M =R29 165,38✓CA VAT = R33 540,19 − R29 165,38✓M = R4 374,81 YES it was calculated correctly✓O 	1M dividing by 115 1A Correct answer 1M subtracting 1O opinion (4)	L4

2.3.1	✓M ✓M (a) Annual taxable income = 12(R42 000 − R2 500) = R474 000✓CA **OR** (a) Annual taxable income = 12 × R42 000) − (12 × R2 500)✓M = R504 000 − R30 000✓S = R474 000✓CA	1M multiplying by 12 1M subtracting R2 500 1CA Correct answer **OR** 1M multiplying by 12 1S simplifying 1CA Correct answer (3)	F L2
	✓M ✓M ✓M (b) Annual Medical Tax Credits = 12(2 × R332 + 3 × R224) = R16 032✓CA **OR** (b) Annual Medical Tax Credits = (12 × R664) + (12 × R672)✓✓M = R7 968 + R8 064 ✓S = R16 032✓CA	1M multiplying by 12 1M multiplying 332 by 2 1M multiplying 224 by 3 1CA Correct answer **OR** 1M multiplying by R664 1M multiplying by R672 1S simplification 1CA Correct answer (4)	F L3
2.3.2	✓A Annual tax = R73 726 + 31%(R474 000 − R353 100)✓SF ✓M ✓M ✓M = R111 205 − 15714 − 24 327 − 16 032 = R55 132✓CA Monthly tax = R55 132 ÷ 12✓M = R4 594,33✓CA Claim is INCORRECT✓O	**CA from 2.3.1** 1A Correct Tax bracket 1SF Correct substitution 2M Subtracting both rebates 1M Subtracting MTC 1CA Correct answer 1M Dividing by 12 1CA Correct answer 1O Opinion (9)	F L4
		[38]	

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QUESTION 3 [21 MARKS]			
Ques	**Solution**	**Explanation**	**T & L**
3.1.1	The mode is the data values of the factors influencing adolescent pregnancy that occurs most often or frequently. ✓✓O	2O explanation (2)	DH L1
3.1.2	discrete✓✓A	2A Correct answer (2)	DH L1
3.1.3	Compound/multiple bar graph✓A Easy comparison of different responses/Data✓O Easy interpretation of different responses/Data✓O	1A Correct answer 1O opinion (2)	DH L4
3.1.4	Poor knowledge✓✓A	2A Correct answer (2)	DH L2
3.1.5	Number of girls $= 74\% \times 150$✓M $= 111$✓A	1M multiplying by 74% 1A Correct answer (2)	DH L2
3.1.6	Negatively affected by outlier(s)✓✓A	2A answer (2)	DH L1
3.2.1	$F = 76{,}8\% - 77{,}6\%$✓M $= -0{,}8\%$✓A	1M subtracting 1A Correct answer (2)	DH L2
3.2.2	5,4%; 4,9%; 2,0%; 1,3%; 0,6%; −0,1%; −0,5% − 0,8%; −1,5%✓✓M median = 0,6%✓A OR −1,5%; −0,8%; −0,5%; −0,1%; 0,6%; 1,3%; 2,0%; 4,9%; 5,4%✓✓M median = 0,6%✓A	2M Arranging in correct order 1A Correct answer 2M Arranging in correct order 1A Correct answer (3)	DH L2

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3.2.3	✓✓M mean = (85.1+ 83.3 + 79.9 + 76.2 + 77.6 + 73.7 + 68.1 + 66.0 + 68.2) ÷ 9 = 689,4% ÷ 9✓M = 76,6%✓A	2M adding percentages 1M dividing by 9 1A Correct answer (4)	DH L2
		[21]	



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QUESTION 4 [32 MARKS]			
Ques	**Solution**	**Explanation**	**T & L**
4.1.1	Interest per year = 9,8% × R60 000✓M = R5 880✓A Total interest = 6 × R5 880✓M = R35 280✓CA **OR** ✓A ✓M ✓M Simple Interest= R60 000 × 9.8% × 6 = R35 280✓CA	1M multiplying by 9,8 1A Correct answer 1M multiplying by 6 1CA Correct answer 1A R60 000 investment 1M multiplying by 9,8% 1M multiplying by 6 1CA Correct answer (4)	F L2
4.1.2	2023: Increase = 11,8% × R8 500 ✓M = R1 003✓A Cost = R8 500 + R1 003✓M = R9 503✓A 2024: Cost = 9503 + (R9 503 × 9%)✓M = R10 358,27✓✓A	1M multiplying 1A simplifying 1M adding 1A simplifying 1M multiplying by 9% 2A simplifying (7)	F L3

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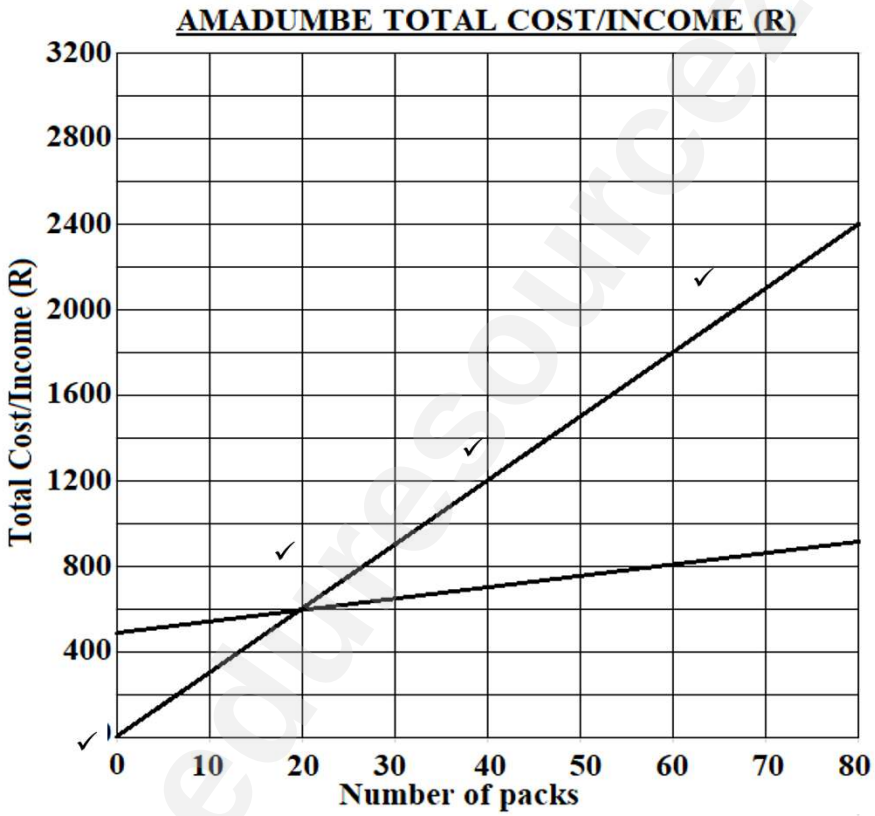
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4.1.3	Total cost in 2024 $= 11 \times$ R10 358,27✓M $=$ R113 940,97✓CA Total amount from investment $=$ R60 000 + R35 280✓M $=$ R95 280✓A He will NOT have enough money✓O	**CA from 4.1.2** 1M multiplying 1CA simplification 1M adding 1A Correct answer 1O opinion (5)	F L4
4.1.4	\$1 450 = R21 117,51 \$1 $= \frac{\text{R21 117,51}}{1\ 450}$ ✓M $=$ R14,56✓A	 1M dividing by 1450 1A for Correct answer (2)	F L2
4.2.1	Organising data✓✓A	2 correct answer (2)	DH L1
4.2.2	✓M Number of cows less 170kg $= 20 + 7 + 11 + 4 + 2$ $= 44$✓A	 1M adding 1A Correct answer (2)	DH L2
4.2.3	Percentage of cows = (71÷125) ×100✓M = 56,8%✓A	1M multiplying 1A Correct answer (2)	
4.3.1	**G** $= 460 - 350$ ✓M $= 110$ ✓A **OR** **G** = 380 – 270 ✓M = 110 ✓A **OR** **H** $= 1\ 550 - 460$ ✓M $= 1\ 090$ ✓A **OR** **H** $= 820 + 270$ ✓M = 1090 ✓A	 1M Subtraction 1A Correct answer **OR** 1M Subtraction 1A Correct answer **OR** 1M Subtraction 1A Correct answer **OR** 1M Addition 1A Correct answer (4)	P L2
4.3.2	P (boy that passed the test) $= \frac{350\text{✓M}}{1\ 170\text{✓M}} = \frac{35\text{✓A}}{117\text{✓A}}$	1M for 350 1M for 1 170 1A for 35 1A for 117 (4)	P L2
		[32]	

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QUESTION 5 [29 MARKS]

Ques	Solution	Explanation	T & L
5.1.1	$P = R500 + R5 \times 20$✓SF $= R600$✓A $Q = (R825 - R500) \div R5$✓M $= 65$✓A	1SF substitution 1A Correct answer 1M method 1A Correct answer (4)	F L2
5.1.2		 1A initial point 1A intersection point 1A any correct point on line 1A joining the points (4)	F L3
5.1.3	It helps her understand the number of packs she needs to sell to cover her cost✓✓O	2O	F L4

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		(2)	
5.2.1	✓C ✓M Real cost of the loan = 72 × R2 208 = R158 976✓A	1C conversion 1M multiplying by 72 1A Correct answer (3)	F L3
5.2.2	Loan amount = R150 000 − R30 000✓M = R120 000✓A Total Interest = R158 976 − R120 000✓M = R38 976✓CA	**CA from 5.2.1** 1M subtraction 1A simplifying 1M Subtracting 1A Correct answer (4)	F L3

Ques	Solution	Explanation	T & L
5.3.1	minimum = 67%✓RD maximum = 86%✓RD	1RD minimum value 1RD maximum value (2)	DH L2
5.3.2	Range = 86% − 67%✓M = 19%✓A IQR = 81% − 73%✓SF = 8%✓CA difference = 20% − 8%✓M = 12% Statement is CORRECT✓O	1M Subtracting 1A Correct answer 1SF Correct Substitution 1CA Correct answer 1M Subtraction 1O Opinion (6)	DH L4
5.3.3	Free State pass rate = 86%✓RD Percentage for failures = 14%✓A	1RD pass 1A failure rate	DH

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	Number of failures $= 14\% \times 35\,055$✓M $= 4\,908$✓A **OR** Number of passes $= 86\% \times 35\,055$✓M $= 30\,147{,}3$✓A Number of failures $= 35\,055 - 30\,147{,}3$✓M $= 4\,908$✓A	1M multiplying 1A Correct answer **OR** 1M multiplying by 86% 1A simplifying 1M subtracting 1A Correct answer (4)	L3
		[29]	
		TOTAL MARKS: 150	

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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

JUNE EXAMINATION
GRADE 12

2023

MATHEMATICAL LITERACY

(PAPER 1)

TIME: 2 hours

MARKS: 100

9 pages and an addendum of 3 pages

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2. Use the ADDENDUM as follows:

   Use ANNEXURE A for QUESTION 2.1
   Use ANNEXURE B for QUESTION 4.3
3. Number your 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. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly.

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QUESTION 1

1.1 Use the information below and VAT at the percentage (%) prescribed by the South African Revenue Service to answer the questions that follow.



'mens sana in corpore sano'

'A healthy mind in a healthy body'



South African schools' tuck shops are encouraged to sell fruit and other healthy products during breaks. TABLE 1 below shows some facts relating to Krugersdorp High School (KHS) tuck shop which sells fruit at school during breaks and lunch times.

TABLE 1: KHS TUCK SHOP'S SALES

80 apples per box	Cost of one apple	Selling price of one apple	Profit on one apple
7 boxes sold daily	R 1, 40 VAT inclusive	R2,00 VAT inclusive	**A**

1.1.1 What does the acronym VAT represent and at what percentage is VAT calculated by the South African Revenue Service? (4)

1.1.2 Explain the meaning of a *VAT inclusive price*. (2)

1.1.3 Determine the value of **A**, the profit on one apple. (2)

1.1.4 Calculate the percentage profit that KHS's tuck shop makes on ONE apple.

Use the following formula:

$$\%\ Profit\ = \frac{selling\ price\ -\ cost\ price}{cost\ price} \times\ 100\ \%$$

(2)

1.1.5 Calculate KHS's tuck shop's daily profit from the sale of apples. (2)

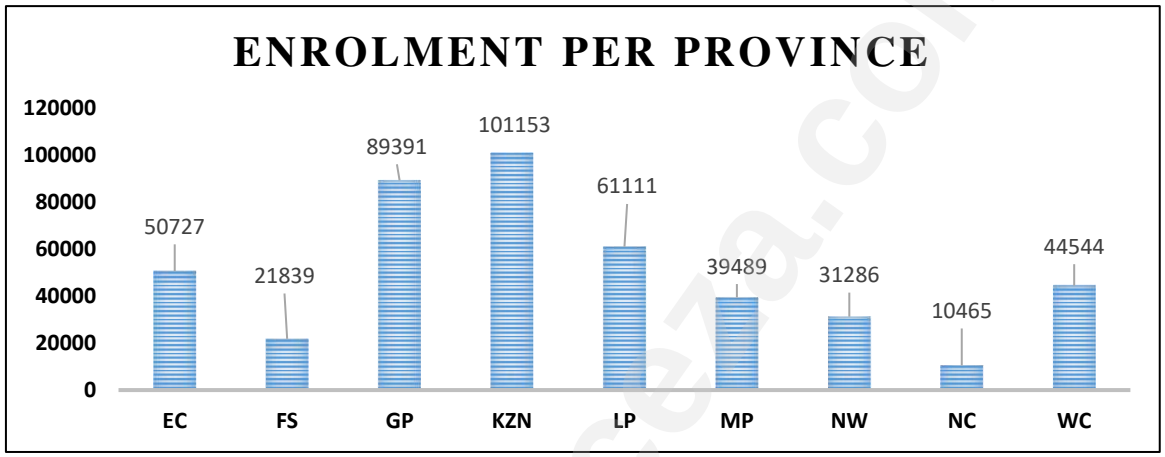
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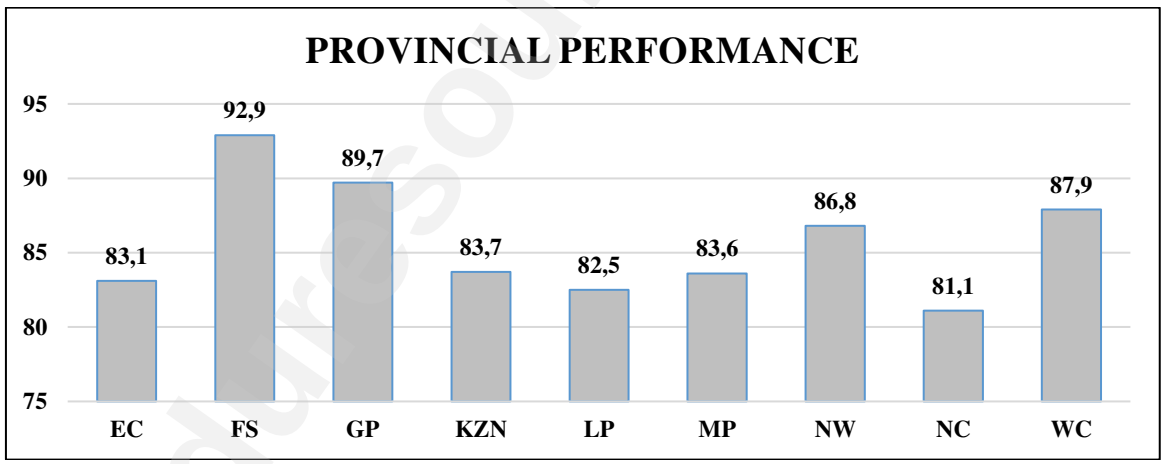
1.2 The year 2022 was a challenging one for matric candidates due to the COVID-19 pandemic which they had faced during 2020 and 2021.

Graph 1 below shows the enrolment of the 2022 candidates who wrote the National Senior Certificate Examination in each province. Graph 2 below shows the pass percentage per province in 2022.

GRAPH 1: NUMBER OF CANDIDATES PER PROVINCE



GRAPH 2: PASS PERCENTAGE PER PROVINCE



1.2.1 Why is the above information represented by a bar graph instead of a histogram? (4)

1.2.2 Calculate the total number of candidates who wrote the 2022 National Senior Certificate Examinations. Write your answer in words. (4)

1.2.3 Which province has the second highest number of candidates and has also achieved the second highest pass percentage in performance? (2)

1.2.4 How many candidates failed the National Senior Certificate examination in KwaZulu-Natal (KZ-N) in 2022? (3)

[25]

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QUESTION 2

2.1 Individuals and companies with bank accounts are allowed to request statements on their accounts, mostly weekly, monthly, and quarterly.

TEBA Bank Savings Account Statement for the period 09/09/2022 to 16/09/2022 is shown in ANNEXURE A.

Use ANNEXURE A to answer the questions that follow.

2.1.1 Write down the account number and name of the account holder. (4)

2.1.2 Determine the total number of transactions made on this account. (2)

2.1.3 Determine the probability of choosing a transaction made on 15/09/2022. (2)

2.1.4 Calculate the total amount of all four TUIB transactions made on this account. (2)

2.1.5 The account holder owed the bank a certain amount on a particular day. Identify the amount that the account holder owed the bank. (2)

2.1.6 Calculate the total amount deposited into this account during the period of the statement. (2)

2.1.7 What percentage of the total amount deposited into this account was paid towards the Westbank Bond? (3)

2.1.8 Calculate the Pre-Paid Water fee on 16/09/2022. (2)

2.2 Merafong municipality encourages its residence to use water sparingly.
Mr. Dromedaries tries to minimise his usage of municipal water and plans to install a wall water tank to collect rainwater. Study the quotation below and answer the questions that follow.



Quotation for installing water tank

WESTONARIA PLUMBING PROJECTS PTY (LTD)
3233 President Street
Westonaria

ITEM	PRICE PER UNIT
Wall tank	R6 479,00
Extra equipment and material	R971,85
Labour per hour or part thereof	R64,99

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Mr Dromedaries found out that the installation will take 2 hours 35 minutes on the first day and 1 hour 54 minutes on the second day.

Mr Dromedaris has a total budget of R7 800 to buy and install the water tank.

Verify, using calculations, whether his budget will be sufficient. (6)
[25]

QUESTION 3

The Gauteng Department of Education bought scientific calculators for all its education districts. The distribution of calculators among these districts is represented in the table below.

TABLE 2: NUMBER OF CALCULATORS DISTRIBUTED

	NUMBER OF CALCULATORS				
	Further Education and Training			**Senior Phase**	
Grade	**10**	**11**	**12**	**8**	**9**
Districts					
Ekurhuleni North	9 000	8 000	7 852	11 670	10 340
Ekurhuleni South	12 000	11 200	10 080	15 622	14 323
Gauteng East	7 000	6 500	6 365	9 760	8 876
Gauteng North	3 000	2 000	1 645	5 290	4 449
Gauteng West	7 000	6 500	6 374	9 230	8 100
Johannesburg Central	8 000	7 000	6 930	10 000	9 568
Johannesburg East	6 000	5 900	5 873	8 950	7 772
Johannesburg North	6 000	5 800	5 773	8 050	7 500
Johannesburg South	6 000	5 900	5 815	8 100	7 679
Johannesburg West	5 000	4 800	4 561	7 200	6 923
Sedibeng East	3 000	2 700	2 463	5 238	4 576
Sedibeng West	6 000	5 000	4 899	8 690	7 640
Tshwane North	7 000	6 800	6 562	9 800	8 823
Tshwane South	9 000	8 500	8 246	11 200	10 060
Tshwane West	7 000	6 000	5 953	9 067	8 990

3.1 How many education districts received calculators? (2)

3.2 Determine the total number of calculators bought by the Gauteng Department of Education for Grade 9 learners. (2)

3.3 Name the district that was allocated the THIRD LOWEST number of calculators for Grade 12 learners. (2)

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3.4 Is the data represented in TABLE 2 above continuous or discrete? Explain your answer. (4)

3.5 Determine the mean number of calculators bought for the Grade 10 learners in only the Johannesburg Districts. (3)

3.6 Use the "Number of calculators" column for Grade 11 and answer the following questions.

(a) Determine the first quartile and third quartile. Thereafter, subtract quartile 1 from quartile 3. What is the answer? (6)

(b) Name the concept calculated in QUESTION 3.6 (a). (2)

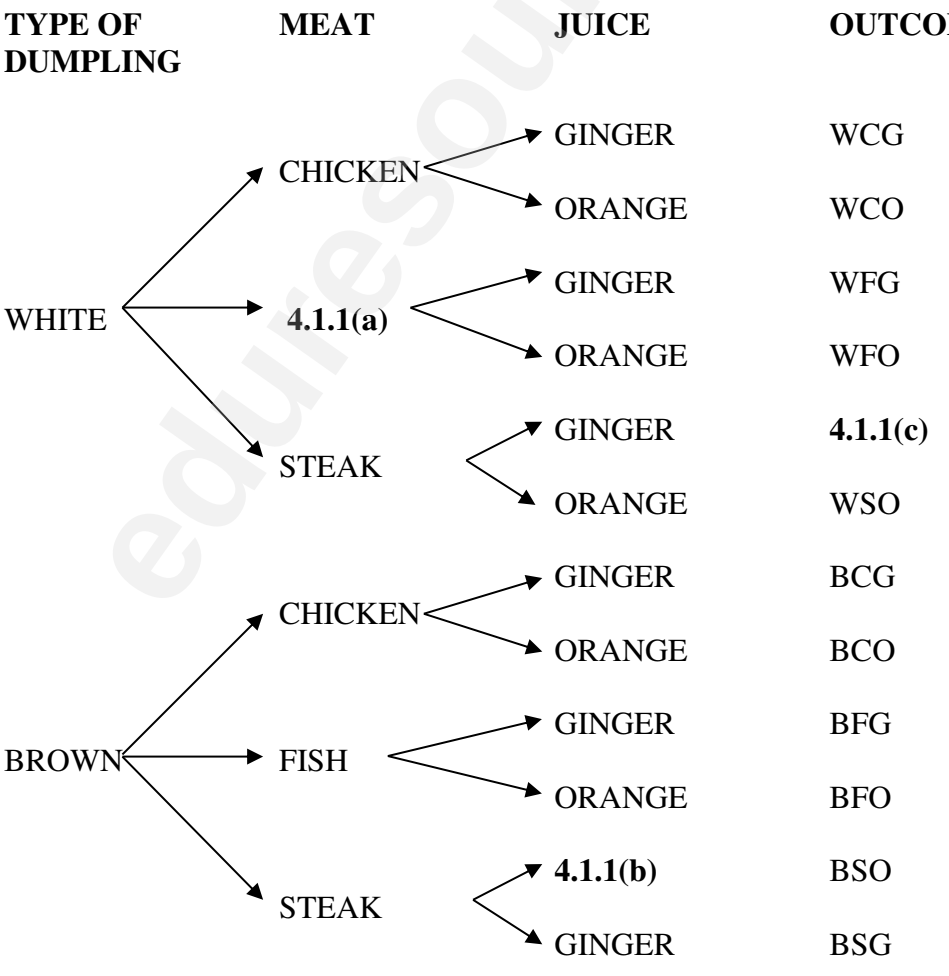
[21]

QUESTION 4

4.1 Mr Shishenga rewards the top 10 Grade 12 learners every term by taking them to different restaurants. Sakhumzi restaurant offers a special dumpling combo with fruit juice for R60,00.

The dumpling dough can be either white (W) or brown (B). The meat filling can be chicken (C), fish (F) or steak (S). The juice choice is ginger (G) or orange (O).

The tree diagram below represents the different choices for this special offer.



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Use the information above to answer the questions that follow.

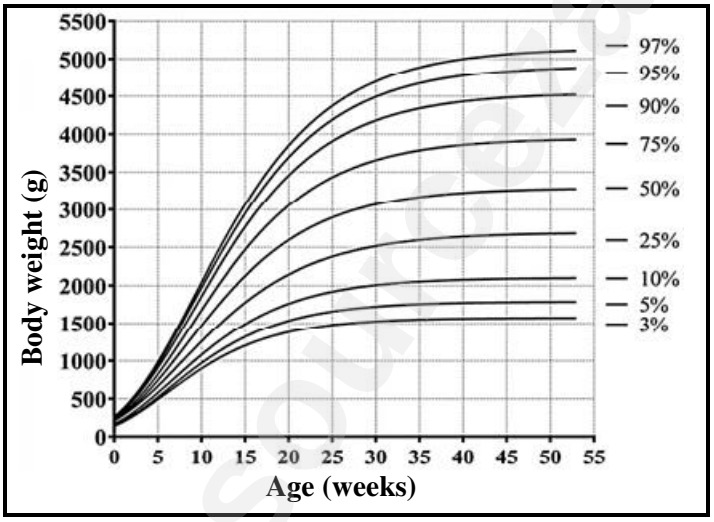
4.1.1 Write down the missing information for 4.1.1(a), 4.1.1(b) and 4.1.1(c). (3)

4.1.2 Determine how many different combinations from which a person has to choose. (2)

4.1.3 Write down the probability of randomly choosing a combination that will have steak as the meat and ginger juice as the beverage. (2)

4.2 Mr Areef is a professional horse breeder. He is highly concerned that his foals (baby horses) might not run as fast as possible due to being overweight. Below is the growth chart for the foals.

GROWTH CHART FOR FOALS



Use the information on the growth chart to answer the following questions.

4.2.1 Determine the weight of a 30-week-old foal that is in the 25th percentile. (2)

4.2.2 Explain what it means if a foal's weight is classified in the 75th percentile. (2)

4.2.3 Mr Areef's foal is 40 weeks old. Write its age in months if there are 4 weeks in a month. (2)

4.2.4 One of Mr Areef's foals weighs 4,5 kg at 45 weeks.

(a) Determine in which percentile its age-weight ratio is. (2)
(b) Give advice to Mr Areef with regard to his foal's weight. (2)

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4.3 Mr Shishenga, a 50-year-old Mathematical Literacy educator at Ekurhuleni North High School, earned a monthly taxable income of R35 357,00 during the 2021/22 tax year. During this time, Mr Shishenga was a member of a medical fund for himself, his wife and his two children.

ANNEXURE B shows the tax table for the 2021/22 tax year. Use the TAX TABLE in ANNEXURE B to answer the questions that follow.

4.3.1 Determine Mr Shishenga's annual taxable income. (2)

4.3.2 Show, with calculations, that Mr Shishenga will receive R13 344 in medical tax credits for the 2021/22 tax year. (4)

4.3.3 Calculate the amount of tax Mr Shishenga must pay for the 2021/22 tax year. (6)
[29]

TOTAL: 100

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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION

2023

10601

MATHEMATICAL LITERACY

(PAPER 1)

TIME: 3 hours

MARKS: 150

11 pages + an addendum of 7 pages

MATHEMATICAL LITERACY: Paper 1

10601E

X05

This question paper consists of 11 pages.
An addendum with 7 pages is included as an insert in the question paper.

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INSTRUCTIONS AND INFORMATION

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

2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

   - ANNEXURE A for QUESTION 1.2
   - ANNEXURE B for QUESTION 3.1
   - ANNEXURE C for QUESTION 3.2
   - ANNEXURE D for QUESTION 3.3
   - ANNEXURE E for QUESTION 4.1

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

4. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.

5. Show ALL calculations clearly.

6. Round-off ALL final answers appropriately according to the given context, unless stated otherwise.

7. Indicate units of measurement, where applicable.

8. Start EACH question on a NEW page.

9. Write neatly and legibly.

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QUESTION 1

1.1 Brian is planning a trip to Canada to visit his uncle. His uncle is a professional tour guide and takes people to various places on sightseeing trips. The tours take place in difficult terrain in Canada. The costs for the tours vary and below you will find all the information for a full week's stay with sightseeing.

OPTION 1	OPTION 2
One-week backpacker sightseeing: **C$12,000** Excluding flights	One-week hotel stay sightseeing: **C$20,000** Excluding flights

Brian's father, Dominique, will cover all Brian's expenses for the trip, including flights and accommodation. Dominique will also give Brian R24 500 for spending and additional expenses.

Brian needs to fly from OR Tambo International airport in Johannesburg to Toronto Pearson International airport in Canada. Brian found a direct return flight costing R16 879, including all taxes.

According to the current exchange rate, 1 Canadian dollar (C$) will cost R13, 48.

Use the information above to answer the questions that follow.

1.1.1 Identify the exchange rate between the two currencies. (2)

1.1.2 Brian did some calculations to determine the cost for sightseeing. He states that only his stay (on the cheaper option) will cost R161 760. Prove, by showing all calculations, how he arrived at this amount. (2)

1.1.3 Determine how much money, in rand, Brian's father will spend on his return flight and spending money. Round-off your final answer to the nearest hundred. (3)

1.1.4 Write down the cost of the return flight in words. (2)

1.1.5 Brian plans to spend only 85% of his spending money while on his trip and save the rest. Determine how much money Brian will spend during his trip. (3)

1.1.6 Show how Brian's total savings, after his spending, adds up to R3 675,00. (2)

1.1.7 Write down the formula that is used to determine the probability of an event. (2)

1.1.8 There are 6 adult male tourists, 9 adult female tourists and two female babies on the tour. Determine the total number of possible outcomes. (2)

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1.1.9 On his return to South Africa, Brian will invest R3 675 at 15% simple interest per year, for a period of one year. Define the term *interest* in this context. (2)

1.2 The Grade 12 learners learn about taxation during their Mathematical Literacy lesson. Thato then looked at corporate taxation in different countries. ANNEXURE A shows the global corporation tax levels in perspective for 2021.

Study ANNEXURE A and answer the questions that follow.

1.2.1 Identify the mode of the overall global corporation levels for 2021. (2)

1.2.2 Identify Quartile 1 (Q_1) and Quartile 3 (Q_3) of the overall global corporation tax levels for 2021. (2)

1.2.3 Select the correct answer in brackets to complete the following sentence:

The median is also known as… (a) (Quartile 1; Quartile 3; Range; Quartile 2) as it represents … (b) (50%; 25%; 75%) of the data. (2)

1.2.4 Which countries represent the lower quarter of global corporation tax levels in perspective? (2)

1.2.5 State the meaning of selecting a country in Quartile 3 with regard to probability. (2)

[30]

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QUESTION 2

2.1 Johnson is a physiotherapist. He was contacted by SARU (the South African Rugby Union) to give the 7s rugby players a massage during the rugby tournament that was held in Cape Town during December 2022. Johnson hires 13 *masseuses to perform this duty.

Number of sessions per day	1	2	3	4	5	8	10
Number of masseuses	13	26	39	52	65	**A**	130
Income in Rand	1 755	3 510	**B**	7 020	8 775	14 040	17 550

*Masseuse: A person who provides a professional massage.

Study the table above and answer the questions that follow.

2.1.1 Show, by means of calculations, that the income for a single massage is R135. (2)

2.1.2 Calculate the values of **A** and **B**. (4)

2.1.3 Complete the following formula to calculate the total income per session.

Income = … × … (2)

2.1.4 Prove that the total income for the weekend, if they start working on Friday and finish on Sunday, is R78 975. There are 15 sessions per day. (6)

2.1.5 Johnson pays each masseuse R1 000 for the weekend and R50 per massage. He needs to rent a room at the Cape Town stadium to perform these massages, which costs R4 800 per day. Calculate his total expenses and express the total income to total expenses as a ratio in unit form. (6)

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2.2 HRM Domestic is a company that helps domestic workers to find jobs. They ensure that domestic workers are not underpaid for the work they do. Income is based on hourly, weekly and monthly rates. Workers work 45 hours per week and 195 hours per month.

Minimum income rates (in Rand)		
	January – December 2021	**January – December 2022**
Hourly	19,09	**C**
Weekly	859,05	1 043,55
Monthly	3 722,55	4 522,05

Study the table above and answer the questions that follow.

2.2.1 Determine the value of **C**, the minimum hourly rate for 2022. (2)

2.2.2 Determine the percentage increase in monthly income, rounded-off to one decimal place.

Use the following formula:

$$\textbf{Percentage increase} = \frac{\textbf{New income} - \textbf{Old income}}{\textbf{Old income}} \times \textbf{100}$$

(3)

2.2.3 Steffi asked if she could work overtime to earn extra money. The person she works for agreed that she could work on Saturdays for R200 per day for only 5 hours. Determine her hourly wage for that day and state whether she was paid the correct minimum wage per hour for the 2022 year. (3)

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PLEASE DETACH THIS ADDENDUM WITH 7 PAGES.

GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION

2023

10601

MATHEMATICAL LITERACY
(PAPER 1)

ADDENDUM

7 pages

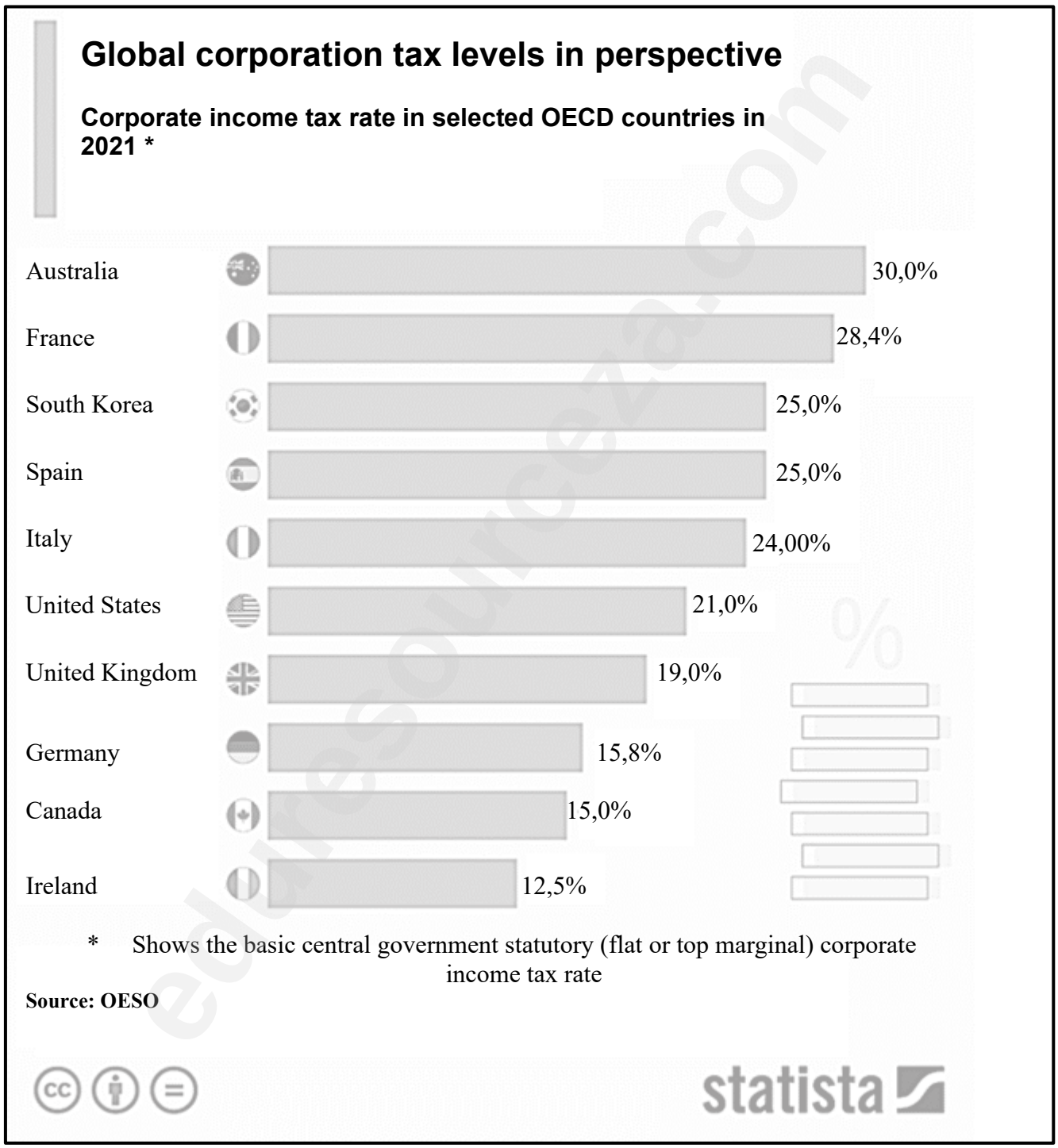
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ANNEXURE A

QUESTION 1.2



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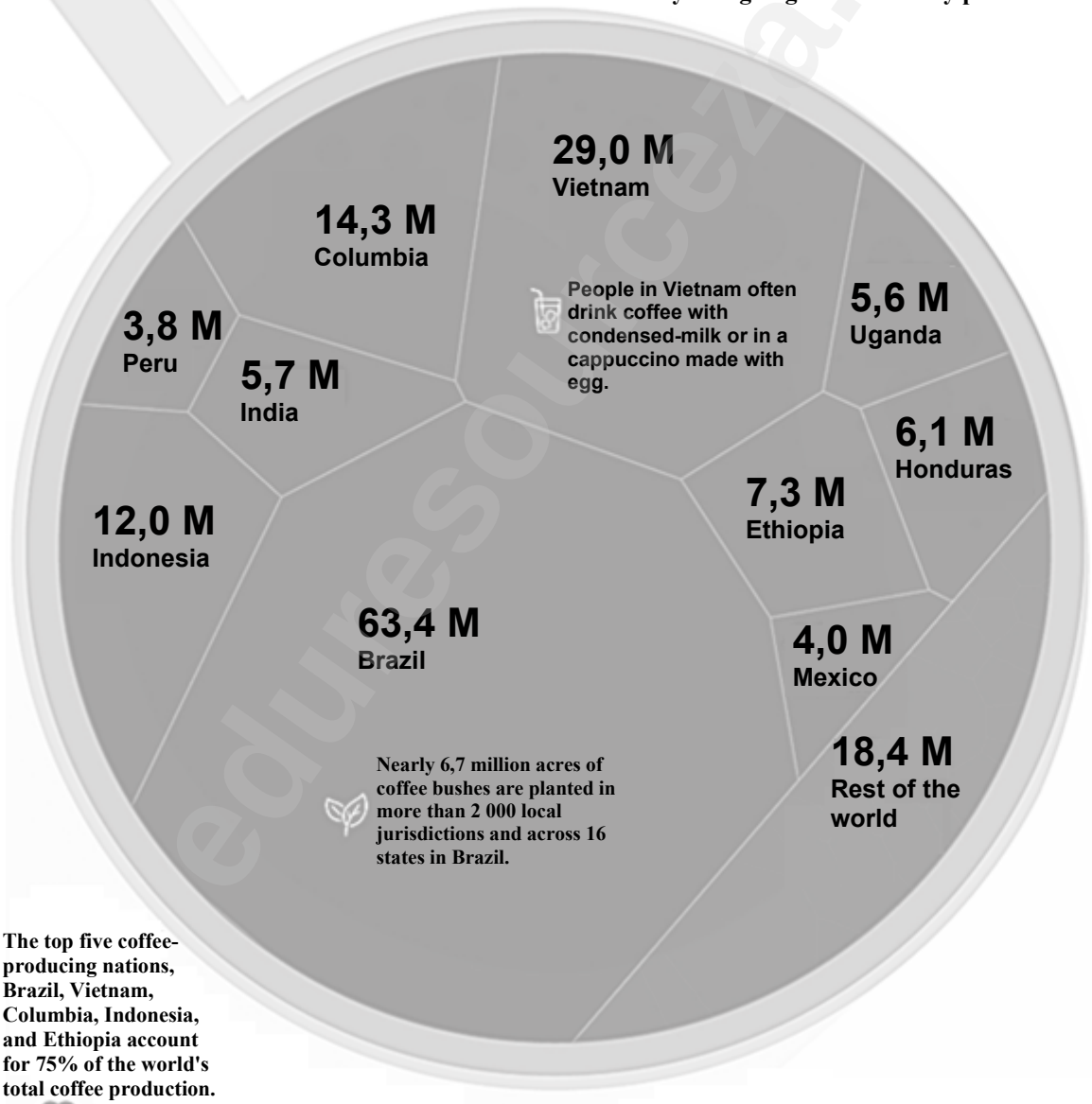
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ANNEXURE B

QUESTION 3.1

Top Coffee Producing countries from around the world

With about half a trillion cups consumed per year, coffee is the world's second most traded commodity. Here are the top coffee-producing countries, and how many 60-kg bags of coffee they produced in 2020.



The top five coffee-producing nations, Brazil, Vietnam, Columbia, Indonesia, and Ethiopia account for 75% of the world's total coffee production.

CAPITALIST

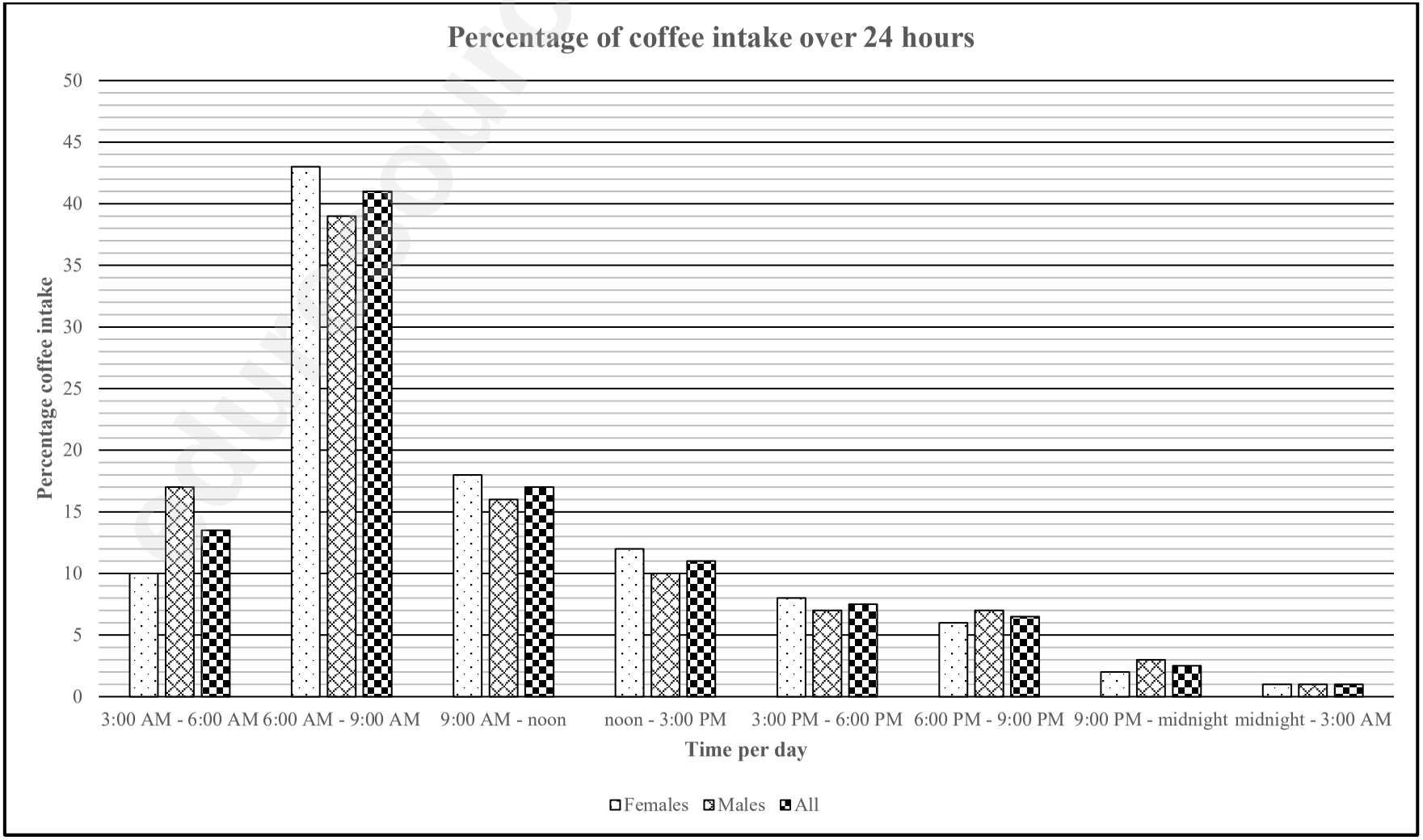
0RESEARCH * WRITING Anschool Deshmukh, Raol Amores / DESIGN Amy Kuo Nisuakapitalist @visualkop visualcapitalist.com

Source: International Coffee Organisation

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ANNEXURE C

QUESTION 3.2



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ANNEXURE D

QUESTION 3.3

Nutrient content of animal-based milk and plant-based milk substitutes								
		Protein (g)	Calcium (mg)	Vitamin D	Vitamin A	Fibre (g)	Sugar (g)	Calories
Animal-based milk products	Full cream milk with added vitamin D	8	276	124	395	0	12	149
	No fat milk with added vitamins A and D	8	299	115	500	0	12	83
Plant-based milk products	Soy milk, fortified	7	301	119	503	1	1	80
	Hemp milk, fortified	3	499	101	499	1	1	73
	Almond milk, fortified	1	451	101	499	1	2	39
	Coconut milk, fortified	<1	451	101	499	0	6	74
	Rice milk, fortified	<1	283	101	151	<1	13	113

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ANNEXURE E

QUESTION 4.1

2023 tax year (1 March 2022 – 28 February 2023)

Bracket Number	Taxable income (R)	Rates of tax (R)
1	1 – 226 000	18% of taxable income
2	226 001 – 353 100	40 680 + 26% of taxable income above 226 000
3	353 101 – 488 700	73 726 + 31% of taxable income above 353 100
4	488 701– 641 400	115 762 + 36% of taxable income above 488 700
5	641 401 – 817 600	170 734 + 39% of taxable income above 641 400
6	817 601 – 1 731 600	239 452 + 41% of taxable income above 817 600
7	1 731 601 and above	614 192 + 45% of taxable income above 1 731 600

2022 tax year (1 March 2021 – 28 February 2022)

Bracket Number	Taxable income (R)	Rates of tax (R)
1	1 – 216 200	18% of taxable income
2	216 201 – 337 800	38 916 + 26% of taxable income above 216 200
3	337 801 – 467 500	70 532 + 31% of taxable income above 337 800
4	467 501 – 613 600	110 739 + 36% of taxable income above 467 500
5	613 601 – 782 200	163 335 + 39% of taxable income above 613 600
6	782 201 – 1 656 600	229 089 + 41% of taxable income above 782 200
7	1 656 601 and above	587 593 + 45% of taxable income above 1 656 600

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Tax Rebates

Tax Rebate	Tax Year	
	2023	**2022**
Primary	R16 425	R15 714
Secondary (65 and older)	R9 000	R8 613
Tertiary (75 and older)	R2 997	R2 871

Tax Thresholds

Age	Tax Year	
	2023	**2022**
Under 65	R91 250	R87 300
65 and older	R141 250	R135 150
75 and older	R157 900	R151 100

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END

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2.3 Mr Navidad works for Letspack. He is a salesman who travels widely to advertise the products that Letspack sells. He drives a 2018 Ford Ranger bakkie that has a current value of R259 900. He travels 1 500 km on average per month. Travel allowance can only be claimed the following month after the number of kilometres travelled have been submitted for claims. His monthly travel allowance consists of a predetermined amount for the current value of the vehicle as well as fuel and maintenance costs.

Current value of the vehicle:	**Fixed Travelling Claim (R/Annum)**	**Fuel Claim (c/km)**	**Maintenance Claim (c/km)**
Does not exceed R95 000	29 836	131,7	40,9
Exceeds R95 000, but does not exceed R190 000	52 889	147,0	51,1
Exceeds R190 000, but does not exceed R285 000	76 033	159,7	56,3
Exceeds R285 000, but does not exceed R380 000	96 197	171,8	61,5
Exceeds R380 000, but does not exceed R475 000	116 438	183,8	72,3
Exceeds R475 000, but does not exceed R570 000	137 735	210,8	**D**
Exceeds R570 000, but does not exceed R665 000	159 031	218,0	105,5
Exceeds R665 000	159 031	218,0	105,5

Study the table above and answer the questions that follow.

2.3.1 Calculate Mr Navidad's monthly fixed travelling claim. (3)

2.3.2 Mr Navidad is thinking of buying a newer model vehicle that has a value of R480 000. Calculate the missing value (**D**), that will represent Mr Navidad's monthly maintenance cost if he decides to buy this vehicle. The amount for his maintenance claim is R1 329. (3)

2.3.3 Mr Navidad decides not to buy the newer vehicle. He states that he could claim back R8 825 after tax is deducted for his monthly travel allowance. He will be taxed at 25% of the actual amount that he can claim. Show by means of calculations whether his statement is valid.

You may use the following formula:

Claim = Monthly fixed travelling claim + (km driven × fuel claim) + (km driven × maintenance claim) (6)

[40]

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QUESTION 3

3.1 The top coffee-producing countries around the world produce coffee for half a trillion cups of coffee per year. ANNEXURE B shows the top coffee-producing countries and how many 60-kg bags of coffee they produced in 2020.

Study ANNEXURE B and answer the questions that follow.

3.1.1 Determine the range of the top coffee-producing countries from around the world, including the rest of the world. (2)

3.1.2 Determine the median of the top coffee-producing countries from around the world. (3)

3.1.3 Determine the interquartile range (IQR) for the top coffee-producing countries from around the world, including the rest of the world. (4)

3.1.4 Which TWO countries represent the bottom 25% of the top coffee-producing countries from around the world? Explain what this means. (4)

3.1.5 What type of graph is used to show the top coffee-producing countries from around the world? (2)

3.1.6 Show, with calculations, that the top 5 coffee-producing countries produce an average of at least 74% of the world's coffee. (4)

3.1.7 Determine the probability of randomly selecting a country from the top coffee-producing countries from around the world, excluding the rest of the world, that produced more than 20 million 60-kg bags of coffee in 2020. Write down your final answer as a percentage. (3)

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3.2 Half a trillion cups of coffee are consumed per year throughout the world. European coffee drinkers consume most of the coffee produced and the Americans are second.
Refer to the graphic representation on ANNEXURE C which displays the percentage intake of coffee over 24 hours.

Use the information in ANNEXURE C and answer the questions that follow.

3.2.1 Which of the following options (X, Y or Z) best describes the data process that was performed before the representation could be drawn. Write down only the letter X, Y or Z.

X Summarising data

Y Posing a question

Z Organising data (2)

3.2.2 Can the data collected be classified as numerical or categorical data? (2)

3.2.3 If this data was collected using a questionnaire, list 3 possible questions that could have been asked. (3)

3.2.4 Describe the general trend of coffee intake for males in comparison to females, over a 24-hour period. (3)

3.2.5 Explain, with justification, whether the data presented is discrete or continuous. (3)

3.2.6 The data represented in the graph on ANNEXURE C comes from one specialised coffee brand in America. The survey was done while the customers waited for their coffee. Explain if this data is biased or valid for the whole world of coffee drinkers. (3)

3.3 Many people are moving to alternatives of animal-based dairy (milk) products for health reasons. When doing so, the necessary good nutritional properties have to be considered: A high concentration of protein, calcium, vitamins D and A, fibre, low calories and low sugar is the best choice.

Refer to ANNEXURE D which shows the nutrient content of animal-based milk and plant-based milk substitutes and answer the question below.

Draw up a comparison table of the plant-based milk products and determine which product will fulfil the need in providing the best source of maximum protein, calcium, vitamin D, vitamin A and fibre as well as the lowest amount of sugar and calories. (4)

[42]

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QUESTION 4

4.1 Lelo is a 68-year-old woman who works for Andiswa Traders. She is the CEO (Chief Executive Officer) of the company and earns a gross salary of R37 480 per month. She contributes an amount of R2 614, 88 towards her pension fund every month.

Refer to ANNEXURE E and answer the questions that follow.

4.1.1 Prove that her annual gross income is R449 760. (2)

4.1.2 Pension fund contributions are non-taxable. Determine her annual taxable income. (3)

4.1.3 Use ANNEXURE E, which shows the tax brackets and personal income tax contributions for 2022 and 2023, to determine how much tax Lelo paid monthly in the 2022 tax year. (8)

4.1.4 Bongiwe is a business owner and is 77 years old. Bongiwe earns a monthly gross income of R13 123, 28. Lelo claims that Bongiwe paid tax in 2022 but is not supposed to make any contributions towards his personal income tax in 2023. Show, with calculations, whether her statement is correct. (4)

4.1.5 Show, with calculations, how the fixed amount of R73 726 in Tax Bracket 3 was calculated for the tax year 2023. (4)

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4.2 Marshall completed his studies and started a new job. He earns a monthly gross income of R14 935. He needs to buy a vehicle to drive to work and back daily.

He would like to buy a small second-hand car from ABS Dealership that offers finance on vehicles. He is interested in a Hyundai (2013 model) that is available at R79 000 cash. He can buy the car on credit, where he will be paying a deposit of R10 000 and 60 monthly instalments of R1 985. This amount does not include insurance for the vehicle.

4.2.1 What is the total amount that Marshall will repay for this vehicle if he decides to buy it on credit? (3)

4.2.2 Marshall claims that he could save more than R40 000 if he buys the car for cash compared to buying it on credit. Evaluate his statement by means of calculations to determine whether he is correct. (3)

4.2.3 A loan offer is available from Trust Bank. They offer a loan of R90 000 at an interest rate of 10% per annum, compounded quarterly. The maximum period of the loan is 36 months.

(a) Marshall decides to take the loan over a period of two years. Determine how much he would repay after 9 months. (6)

(b) Marshall is considering buying a new vehicle in a few years. He needs to take inflation into consideration. The expected inflation rate for the next 3 years is as follow:

Year	2024	2025	2026
Inflation as %	1,25	0,5	1,05

A new Hyundai is currently priced at R139 800. Determine how the 2023 price of the Hyundai will change over the next two years and whether it would be wise for him to wait. (5)

[38]

TOTAL: 150

END

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GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

JUNE EXAMINATION
GRADE 12

2023

MATHEMATICAL LITERACY

(PAPER 2)

TIME: 2 hours

MARKS: 100

8 pages and an addendum of 6 pages

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INSTRUCTIONS AND INFORMATION

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

2. Use the ADDENDUM as follows:

   Use ANNEXURE A for QUESTION 1.3
   Use ANNEXURE B for QUESTION 2.1
   Use ANNEXURE C for QUESTION 2.3
   Use ANNEXURE D for QUESTION 4.2
   Use ANNEXURE E for QUESTION 4.3

3. Number your 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. Maps and diagrams are NOT necessarily drawn to scale, unless stated otherwise.

10. Write neatly and legibly.

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QUESTION 1

1.1 Pheladi bought the instruments below to monitor her temperature. Study the pictures below and answer the questions that follow.

A



B



1.1.1 Name the instruments represented above. (2)

1.1.2 Round-off the digital reading from instrument **B** above, to the nearest ten. (2)

1.1.3 Which instrument (**A** or **B**) displays a lower reading? (2)

1.2 Pheladi uses the two types of clocks below to manage time. Use the information displayed on the clocks to answer the questions that follow.

C



Displayed time: Morning

D



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1.2.1 Write the time on clock D in words. (2)

1.2.2 Express the time on clock C in a 24-hour format. (2)

1.2.3 Pheladi went to visit her mother in Nelspruit. She left home at the time displayed on clock C and arrived at the time displayed on clock D. For how long did she travel? (2)

1.3 Pheladi went to the local university to apply for a bursary. She used the map (on ANNEXURE A) to find the university. Study the map on ANNEXURE A and answer the questions that follow.

1.3.1 Identify the national road found on this map. (2)

1.3.2 What is the general direction of Pick & Pay from the Formula One Hotel? (2)

1.3.3 How many sets of traffic lights will she pass when travelling from Enoz Mabusa Street to Tshwane University? (2)

1.3.4 In which direction should Pheladi drive if she is travelling from Rob Ferreira Hospital to Tshwane University? (2)

[20]

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QUESTION 2

2.1 Mpho and Mandla are travelling together from Krugersdorp to Pretoria to attend a meeting to organise a Mathematical Literacy Olympiad. Study the map in ANNEXURE B and answer the questions that follow.

2.1.1 Which neighbouring province is situated to the south of Gauteng? (2)

2.1.2 Identify the scale used on the map. (2)

2.1.3 Name the last town they will pass before they can reach Pretoria. (2)

2.2 After the meeting, Mandla decided to visit his friend in Bronkhorstspruit.

2.2.1 Write detailed instructions to direct him from Pretoria to Bronkhorstspruit. (4)

2.2.2 How many toll gates will Mandla pass on his journey from Krugersdorp to Bronkhorstspruit? (2)

2.2.3 Calculate the actual, straight-line distance, from Krugersdorp to Bronkhorstspruit (in km). (6)

2.3 Mpho decided to take a bus from Johannesburg to Bloemfontein. The bus stopped twice for 20 minutes at each stop. The bus departed at 07:20 and arrived in Bloemfontein at 11:30. She claimed that they were travelling at an average speed of 120 km/h. Use ANNEXURE C to verify her claim.

You may use the formula:
Distance = Time × Average speed (6)
[24]

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QUESTION 3

3.1 Shirley has a catering company and she bought an urn to prepare tea for her customers. She uses a bucket to fill the urn.

The dimensions of the urn and the dimensions of the bucket are indicated below. Study the information below and answer the questions that follow.



- The height of the urn excluding the lid is 380 mm. **N.B. 1 ℓ = 1 000 cm^3**
- The base of the urn is 4 cm high.
- The volume of the bucket is 18,46 litres.

3.1.1 Define the term *volume* in this context. (2)

3.1.2 Determine the height of the bucket, rounded-off to the nearest cm.
You may use the formula: **Volume = ℓ × *b* × *h*** (6)

3.1.3 Show that the circumference of the urn is 138,248 cm.
You may use the formula: **Circumference = π × d**; where π = 3,142 (2)

3.2 Shirley boiled the water and wrapped the outer part of the urn (the steel part) with foil.

3.2.1 What is the importance of wrapping the urn with foil? (2)

3.2.2 Determine the radius of the urn. (2)

3.2.3 Hence, calculate the area of the urn which was covered with the foil.
You may use the formula: **Area to be covered = 2πr × h**; where π = 3,142 (5)

3.2.4 Determine the volume of the urn.
You may use the formula: **Volume of urn = $\pi r^2 h$**; where π = 3,142 (2)

3.3. Shirley uses a bucket to refill the urn. The bucket holds 18,46 litres of water. Determine the number of buckets needed to refill the empty urn. (4)

[25]

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QUESTION 4

4.1 Sipho owns a bakery and he makes and sells bread and cakes to the local community. A fast selling item is banana bread with custard. The recipe to prepare the banana bread is indicated below. Study the recipe below and answer the questions that follow.



Recipe for banana bread:

2 medium (7 inches) ripe bananas
75 g butter
½ teaspoon baking soda
1 pinch salt
150 g sugar
1 large egg
1 teaspoon vanilla essence
1 and ½ cup flour

The recipe caters for 8 people.
1 inch = 2,54 cm
1 cup = 200 g

4.1.1 Convert 7 inches to cm. (2)

4.1.2 How many loaves are needed to serve 45 people? (4)

4.1.3 Determine the number of **full** cups of butter required to bake 3 loaves. (5)

4.1.4 Sipho bought 2,5 kg of sugar and claimed that he can prepare the banana bread to serve more than 150 people. Verify his claim. (5)

4.1.5 Express the amount of sugar to butter in the simplest ratio. (3)

4.2 Sipho lives in Cradock and travels every weekend, via Kenton-on-Sea to his restaurant in East London. He claims that his return trip covers 1 000 km. Use ANNEXURE D to verify his claim. (6)

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4.3 Sipho also owns a catering company. For dessert, clients can choose from the following options:

Base:

Banana bread **(B)** or Malva pudding **(P)**

Top:

Yoghurt **(Y)** or Custard **(C)**

Decoration:

Strawberries **(S)** or Mint chocolate flakes **(M)**

The tree diagram in ANNEXURE E represents the different options of dessert. Study the tree diagram and answer the questions that follow.

4.3.1 Complete the tree diagram by writing the values of (i) and (ii). (2)

4.3.2 How many possible outcomes are represented in the tree diagram? (2)

4.3.3 What is the probability of choosing a dessert with the banana bread base? (2)
[31]

TOTAL: 100

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education

Department of Education
FREE STATE PROVINCE

JUNE PAPER 1

GRADE 12

MATHEMATICAL LITERACY



This question paper consists of 9 pages.

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INSTRUCTIONS AND INFORMATION

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

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QUESTION 1

1.1 Ms Hlahane received the following salary slip for the month of April 2024.

TABLE1: Salary slip showing Ms Hlahane's earnings and deductions:

OFFICE IMAGING SOLUTIONS			
PO Box 342 Tabel View Employee code: Hlahane01 Employee Name: Miss Hlahane Job Title: Managing director		Period end date: 2024/04/30 Date started: 2008/01/01 ID number: 7408050045078	
Earnings (R)		**Deductions (R)**	
Basic salary	35 000,00	Tax UIF Medical Aid Pension	5 111,00 **A** 1 350,00 2 625,00
Total earnings	35 000,00	Total deductions	**9 436,00**
Net pay			**B**

Use the information in Table 1 above to answer the questions that follow.

1.1.1 Write down the name of the employer. (2)

1.1.2 Explain the meaning of the term *basic salary.* (2)

1.1.3 Write the acronym *UIF* in full. (2)

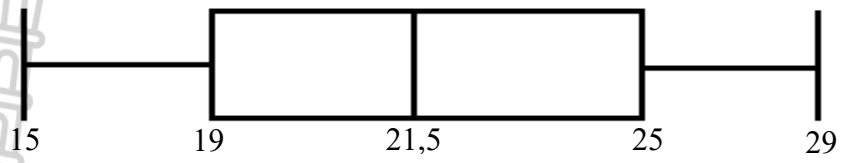
1.1.4 Calculate **A,** the UIF contribution. (3)

1.1.5 Determine the net pay (**B**) for this employee. (2)

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1.2 The diagram below represents the marks achieved in a Mathematical Literacy test for Class B at Kahobotjha Secondary School in Sasolburg.



Use the information given above and answer the following questions.

1.2.1 Identify the type of diagram drawn above. (2)

1.2.2 Write down the median for Class B. (2)

1.2.3 Determine the percentage of learners who obtained 19 to 25 marks. (2)

1.2.4 Calculate the difference between the maximum and minimum marks for Class B. (3)

[20]

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QUESTION 2

2.1 Miss De Waal is a resident at Sasolburg and used 20 kℓ of water in June 2023.

TABLE 2: Domestic Water Tariffs for Metsimaholo Municipality in 2023/2024

Block	Water usage	Tariff (Rands) VAT excl.
Block 1	0 – 6 kl	R9,93
Block 2	6,1 – 12 kl	R23,05
Block 3	12,1 – 20 kl	R26,61
Block 4	20,1 – 30 kl	R37,65
Block 5	30,1 – 45 kl	R46,34
Block 6	More than 45 kl	R52,67

[Source from www.metsimaholo.gov.za]

Use TABLE 2 and the information above and answer the questions that follow.

2.1.1 Explain the meaning of the term *tariff* in the given context. (2)

2.1.2 Write down the maximum number of kilolitres of water that can be charged in block 2. (2)

2.1.3 Calculate the total amount, including VAT, that Miss De Waal will pay for the number of kilolitres that she used in June 2023. (7)

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2.2 Miss De Waal wants to remodel her dining room. She saw a nice dining room suite at a Furniture store that she would like to purchase.



CASH PURCHASE		HIRE PURCHASE	
Discounted price	R19 999,95	Deposit	R2 000
Original price	R23 999,95	Instalment	R930 per month
		Period	3 years

[Adapted from www.bradlows.co.za]

Use the information above to answer the questions that follow.

2.2.1 Determine the difference between the original price and the discounted price. (2)

2.2.2 Write down the deposit as a percentage of the discounted price. (3)

2.2.3 Calculate the total amount to be paid after 3 years on the hire purchase option is used. (4)

2.2.4 How much would Miss De Waal save if she paid cash for the dining room suite instead of buying on hire purchase. (2)

2.2.5 Write down one advantage of buying an item on hire purchase. (2)

2.3 Miss De Waal decided to take a personal loan in order to buy the dining room suite in cash. She went to two Banks and was offered the following:

Bank A: R20 000 at 10% p.a. Simple interest for 3 years.

Bank B: R20 000 at 11,5% p.a. Compound interest for 2 years.

Determine, showing ALL calculations, which option will be cheaper for Miss De Waal. (8)

[32]

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QUESTION 3

In a survey, 40 grade 12 learners from Setjhaba se Maketse Combined school were asked how many hours per week do they spend practicing Mathematical Literacy.

Their responses (to the nearest hour) are given below.

CLASS A

5	10	12	4	3	12	7	10	8	6
6	8	4	10	8	7	6	9	3	7

CLASS B

2	2	3	3	4	5	6	7	7	7
8	8	9	9	10	10	11	11	12	12

[Adapted from Ace it! Study guide gr 12]

Use table 3 and the information above to answer the questions that follow.

3.1 State if the above data is a sample and population of all the learners at Setjhaba se Maketse Combined school. (2)

3.2 Arrange the data for class A above in descending order. (2)

3.3 Calculate the mean number of hours spent practising Mathematical Literacy for class B. (3)

3.4 Determine the interquartile Range (IQR) for number of hours for class A. (5)

3.5 Determine the probability (as a decimal) of randomly selecting a learner that practiced for more than 6 hours. (3)

3.6 Give one possible reason why some learners have fewer practising hours. (2)

[17]

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QUESTION 4

4.1 Mr Mathews is a 65-year-old employee who earns a basic salary of R40 165 per month. He contributes 7,5% of his basic salary towards pension fund and pays medical aid for himself and his 3 children.

TABLE 4.1: Tax rates for 2023/2024 tax year

Taxable Income (R)	Rate of Tax (R)
1 – 237 100	18% of taxable income
237 101 – 370 500	42 678 + 26% of taxable income above 237 100
370 501 – 512 800	77 362 + 31% of taxable income above 370 500
512 801 – 673 000	121 475 + 36% of taxable income above 512 800
673 001 – 857 900	179 147 + 39% of taxable income above 673 000
857 901 – 1 817 000	251 258 + 41% of taxable income above 875 900
1 817 001 and above	644 489 + 45% of taxable income above 1 817 000

Age	Threshold 2023/2024
Below age 65 years	R95 750
Age 65 years to below 75 years	R148 217
Age 75 years and over	R165 689

Rebate	Rebate Amount (R)
Primary	R17 235
Secondary (65 years +)	R9 444
Tertiary (75 years +)	R3 145

MTC (Medical tax credit)	Per month
Taxpayer	R364
First dependant	R364
Each additional dependant	R246

[Source: www.sars.gov.za]

Use TABLE 4.1 and the information above to answer the questions that follow.

4.1.1 Write down the abbreviation SARS in full. (2)

4.1.2 Show how the tax threshold value of R148 217 was calculated. (3)

4.1.3 Determine his annual medical tax credit for him and his 3 children. (4)

4.1.4 Mr Mathews claimed that is annual taxable income is R445 831,50. Verify, show all calculations, if his claim is correct. (5)

4.1.5 Hence, calculate his annual income tax. (6)

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4.2 Mining plays a significant role in the economy of our nation. The information below indicates how the mining industry performed in 2022.

TABLE 4.2: Performance of the mining industry in 2022

Metal and minerals	Number of employees	Employees earnings (in billion rands)	Royalties paid	Production (in tons)	Total sales (in billion rands)
Manganese	10 846	3,5	R802 million	16,4 million	47,6
Chrome	19 693	6,1	R850 million	17,5 million	22,8
Diamond	15 728	4,7	R362 million	7,2 million	13,3
Iron ore	19 092	6,6	R2,1 billion	70,5 million	71,4
Gold	95 130	24,3	R288 million	101,3 million	72,6
Platinum	164 513	52,1	R1,12 billion	262,9 million	126,6
Coal	92 230	27,9	R2,1 billion	258,9 million	139,3
Total	…	…	…	…	…

[Adapted from mineralscouncil.com]

NOTE:

Royalties are fees imposed by government on either the amount of minerals produced at a mine or the revenue or profit generated by the minerals sold from a mine.

A Ton is equal to 1 000kg.

Use TABLE 4.2 above to answer the questions that follow.

4.2.1 Are the number of employees above regarded as discrete or continuous data? (2)

4.2.2 Identify the type of 'metals and minerals' that are paid the LEAST royalties. (2)

4.2.3 Determine the median value for the total production. (2)

4.2.4 Calculate the probability (as a percentage) of randomly selecting a type of 'metals and minerals' that had total sales of more than 100 billion rands in 2022. (3)

4.2.5 Write down the modal value for 'royalties' paid. (2)

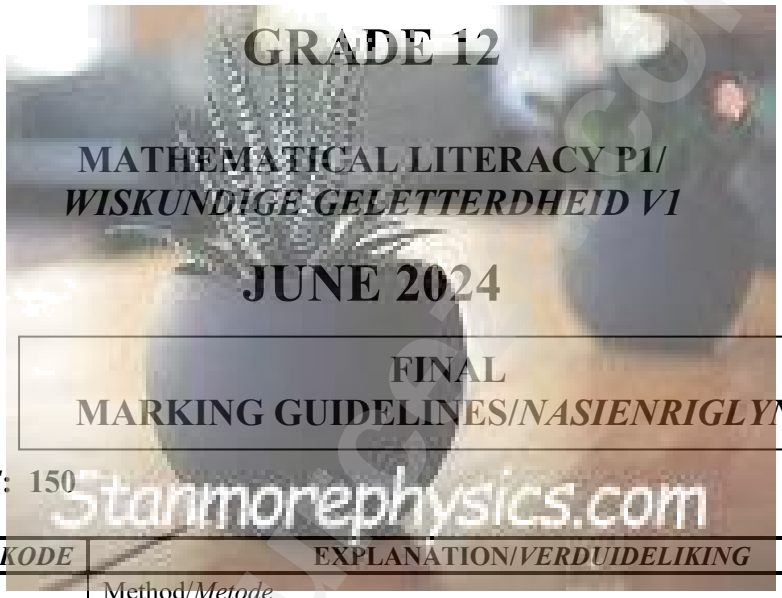
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GRADE 12

MATHEMATICAL LITERACY P1/
WISKUNDIGE GELETTERDHEID V1

JUNE 2024

FINAL
MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

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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 9 pages.
Hierdie nasienriglyne bestaan uit 9 bl

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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 [20 MARKS/*PUNTE*]		**ANSWER ONLY FULL MARKS**	
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
1.1.1	Office Imaging Solutions ✓✓A	2A correct name (2)	F L1 E
1.1.2	Salary before **benefits or allowance** are added. ✓✓O *Salaris voor voordele bygevoeg word.* **Do not accept: Salary before deductions, because it's a definition of Gross not Basic Salary.**	2O correct explanation (2)	F L1 E
1.1.3	Unemployment Insurance Fund ✓✓O *Weekloosheidsversekeringsfonds*	2O correct explanation (2)	F L1 E
1.1.4	✓RT ✓MA **A** = R9 436 – R5 111 – R1 350 – R2 625 ✓A = R350 **OR** ✓MA ✓RT $\mathbf{A} = \frac{1}{100} \times$ R35 000 ✓A = R350	1RT correct values 1MA subtracting from the total 1A simplification 1RT **R35 000** 1MA calculating a percentage 1A simplification (3)	F L1 E
1.1.5	✓MCA **B** = R35 000 – R9 436 = R25 564 ✓CA	1 MA subtracting values 1CA simplification (2)	F L1 E

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
1.2.1	Box and whisker plot ✓✓A Snor en blaar diagram **Accept** **Box and Whisker** ✓✓A OR **Box plot** ✓✓A OR **Whisker Box**	2A correct name (2)	D L1 E
1.2.2	Median /*Mediaan* = 21,5 ✓✓A	2A correct median (2)	D L1 E
1.2.3	50% ✓✓A	2A correct percentage (2)	D L1 M
1.2.4	Difference/*Verskil* = 29 – 15 ✓MA ✓RT = 14 ✓A	1RT correct values 1MA subtracting correct values 1CA simplification (3)	D L1 E

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QUESTION/*VRAAG* 2 [32 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
2.1.1	✓✓O It is a rate/charge/amount charged per kilolitre of water used. **Tarief is 'n koers/heffing/bedrag wat per kiloliter water gehef word.*	2O correct explanation (2)	F L1 E
2.1.2	6 kℓ✓✓A	2A correct answer **NPU** (2)	F L1 M
2.1.3	First/*eerste* 6 kℓ = 6 kℓ × R9,93 ✓MA = R59,58 ✓A Next/*Volgende* 6 kℓ = 6 kl × R23,05 = R138,30 ✓CA Next/*volgende* 8 kℓ = 8 kl × R26,61 = R212,88 ✓CA Total excluding VAT/*Tottal BTW uitgesluit* = R59,58 + R138,30 + R212,88 = R410,76 ✓CA Total including VAT /*Totaal BTW ingesluit* = R410,76 × $\frac{115}{100}$ ✓M = R472,37 ✓CA **OR** VAT/*BTW* = R410,76 × $\frac{15}{100}$ ✓M = R61,61 Total including VAT = R410,76 + R61,261 *Totaal BTW ingesluit* = R472,37 ✓CA	1MA multiplying correct values 1A correct amount 1CA amount for next kℓ 1CA amount for last kℓ 1CA total excluding VAT 1M calculating VAT 1CA total excluding VAT 1M calculating VAT 1CA total including VAT (7)	F L3 D

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.2.1	✓MA Difference = R23 999,95 – R19 999,95 *Verskil* = R4 000✓A	1MA subtracting correct values 1A simplification (2)	F L1 E
2.2.2	✓A Percentage = $\frac{R2000}{R19\,999,95} \times 100$ *Persentasie* ✓A = 10% ✓CA	1A numerator 1A denominator 1CA simplification **AO NPR** (3)	F L2 M
2.2.3	Number of months = 3 × 12 *Aantal maande* = 36✓A ✓M ✓M Total amount = (R930 × 36) + R2 000 *Totale bedrag* = R35 480✓CA	1A for 36 1M multiply by instalment (R930) 1M adding deposit (R2 000) 1CA simplification (4)	F L3 M
2.2.4	✓MCA Saving = R35 480 – R19 999,95 *Spaar* = R15 480,05✓MCA	CA from 2.2.3 1MCA subtracting values 1CA simplification **AO** (2)	F L2 E
2.2.5	Paying for the item while using it.✓✓O *Betaal vir item terwyl jy dit gebruik.* **OR/*OF*** No need to have cash.✓✓O *Nie nodig om kontant te hê nie.* **OR/*OF*** Instalments are affordable.✓✓O *Paaiemente is beskostigbaar.* **OR/*OF*** Credit is insured.✓✓O *Krediet is verseker.* (Any relavant answer) (*Enige relevante antwoord)*	2O correct advantage (2)	F L4 M

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.3	**Simple interest - Bank A/*Enkelvoudige rente – Bank A***		F L4 D
	Interest = R20 000 × $\frac{10}{100}$ ✓MA *Rente* = R2 000✓A	1MA calculating interest 1A interest amount	
	Total interest = R2 000 × 3 *Totale rente* = R6 000✓CA	1CA total interest for 3 years	
	Total amount = R20 000 + R6 000 *Totale Bedrag* = R26 000 ✓CA	1CA total for Bank A	
	Compound interest – Bank B/*Saamgestelde rente*		
	1st year = R20 000 × $\frac{11,5}{100}$ ✓M *1ste jaar* = R2 300	1M calculating interest	
	= R20 000 + R2 300		
	= R22 300✓CA	1CA amount for 1st year	
	2nd year = R22 300 × $\frac{11,5}{100}$ *2de jaar* = R2 564,50		
	= R22 300 + R2 564,50		
	= R24 864,50✓CA	1CA amount for 2nd year	
	Bank B is cheaper. ✓O *Bank B is goedkoper*	1O conclusion	
	OR/OF		
	Total amount = R20 000 × $\frac{111,5}{100}$ ✓M × $\frac{111,5}{100}$ ✓M *Totale bedrag* = R24 864,50✓CA	1M multiply by 111,5 1M multiply by 111,5 1CA answer	
	Bank B is cheaper.✓O *Bank B is goedkoper*	1O conclusion (8)	

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QUESTION/*VRAAG* 3 [17 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
3.1	Sample ✓✓A *Steekproef*	2A sample (2)	D L1 E
3.2	12 12 10 10 10 9 8 8 8 7 7 7 6 6 6 5 4 4 3 3 ✓✓A	2A arrange in descending order (2)	D L1 E
3.3	Mean/ *Gemiddeld* $= \frac{2+2+3+3+4+5+6+\cdots 12.}{20}$ ✓A $= \frac{145}{20}$ ✓A = 7,25 ✓CA	1A adding values 1A concept of mean 1CA mean (3)	D L2 M
3.4	Q1 = $\frac{5+6}{2}$ ✓MA = 5,5✓CA Q3 = $\frac{9+10}{2}$ = 9,5✓CA IQR = Q3 – Q1 ✓A = 9,5 – 5,5 = 4 ✓CA	**CA from 3.2** 1MA adding and dividing values 1CA value of Q1 1CA correct answer Q3 1A correct formula 1CA simplification (5)	D L3 D
3.5	Probability = $\frac{25}{40}$ ✓A ✓A = 0,625 ✓CA	1A numerator 1A denominator 1CA simplification **NPR** (3)	P L2 E
3.6	Laziness/ House chores/ Loadshedding ✓✓O (any other relevant answer) *Luiheid/Huistakies/Beurtkrag* *(enige ander relevante antwoord)*	2O correct opinion (2)	D L4 E

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QUESTION/*VRAAG* 4 [32 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
4.1.1	South African Revenue ServiceS ✓✓A *Suid-Afrikaanse Inkomstediens*	2A SARS in full (2)	F L1 E
4.1.2	Tax threshold = R17 235 + R9 444 ✓M *Belastingdrempel* = R26 679 ✓CA $\frac{R26\,679}{0,18}$ ✓M = R148 216,666 = R148 217	1M adding correct rebates 1CA total rebates 1M divide with 18% (3)	F L3 D
4.1.3	Annual Medical tax credit/*Jaarlikse mediese belastinkrediet* = (R364 × 2 ×12) + (R246 ×2 × 12) ✓RT ✓M ✓M = R8 736 + R5 904 = R14 640 ✓CA **OR/*OF*** Annual Medical tax credit/*Jaarlikse meidese belastingkrediet* = (R364 + R246) ✓RT = R610 × 2 × 12 ✓M ✓M = R14 640 ✓CA	1RT correct values (364 and 246) 1M multiply by 2 1M multiply by 12 1CA simplification 1RT correct values (364 and 246) 1M multiply by 2 1M multiply by 12 1CA simplification (4)	F L3 M

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.1.4	Annual income = R40 165 × 12 *Jaarlikse inkomste* = R481 980 ✓A	1A annual income 1MA multiply by 7,5%	F L3 M
	Annual pension = R481 980 × $\frac{7,5}{100}$ ✓MA Jaarlikse pensioen = R36 148,50 ✓CA	1CA annual pension	
	Annual taxable income = Annual income – Annual pension *Jaarlikse belasbare inkomste = Jaarlikse inkomste – jaarlikse pensioen* = R481 980 – R36 148,50 = R445 831,50✓CA	CA annual taxable income 1O conclusion	
	He is correct.✓O *Hy is reg.*		
	OR/*OF*		
	Monthly pension = R40 165 × $\frac{7,5}{100}$ ✓MA *Maandelikse persioen* = R3 012,38	1MA multiply by 7,5%	
	Annual pension = R3 012,38 × 12 *Jaarlikse pensioen* = R36 148,50 ✓CA	1CA annual pension	
	Annual income = R40 165 × 12 *Jaarlikse inkomste* = R481 980 ✓A	1CA annual income	
	Annual taxable income = Annual income – Annual pension *Jaarlikse belasbare inkomste = Jaarlikse inkomste – Jaarlikse pensioen* = R481 980 – R36 148,50 = R445 831,50✓CA	CA annual taxable income	
	He is correct.✓O *Hy is reg.*	1O conclusion (5)	

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.1.5	Annual income tax /*Jaarlikse inkomste belasting* ✓A = R77 362 + 31% of income above R370 500 ✓SF = R77 362 + [0,31 × (R445 831,50 – R370 500)] = R77 362 + (0,31 × R75 331,50) = R77 362 + R23 352,77 = R100 714,77 ✓CA = R100 714,77 – R17235 – R9444 ✓M = R74 035,77 – R14 640 ✓M = R59 395,77 ✓CA	**CA from 4.1.3 and 4.1.4** 1A correct tax bracket 1SF substitution 1CA simplification 1M subtract both rebates 1M subtract MTC 1CA income tax (6)	F L3 M
4.2.1	Discreet data ✓✓A *Diskrete data*	2A correct type of data (2)	D L1 E
4.2.2	Gold ✓✓A *Goud* *OR* 288 000 0000 OR 288 million	2A correct type (2)	D L1 E
4.2.3	✓MA Median/*Mediaan* = 7,2 16,4 17,5 70,5 101,3 258,9 262,9 = 70,5 million tons/*miljoen ton* ✓CA	1MA arranging values 1CA median **AO** **NPU** (2)	D L2 M
4.2.4	P= $\frac{2}{7} \times 100$ ✓A ✓A = 28,571% ✓CA	1A numerator 1A denominator 1CA simplification **AO** **NPR** (3)	P L2 M
4.2.5	R2,1 billion/*miljard* ✓✓A	2A correct mode (2)	D L1 E

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EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION

2023

MARKING GUIDELINES

MATHEMATICAL LITERACY (PAPER 1) (10601)

13 pages

Codes	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification/Reason/Explain
S	Simplification
RT/RD/RG	Reading from a table/graph/diagram/map/plan
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty, e.g. for no units, incorrect rounding-off, etc.
R	Rounding-off
NP	No penalty for rounding-off OR omitting units

KEY TO TOPIC SYMBOL:

F = Finance; DH = Data Handling; P = Probability

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QUESTION 1

Q	ANSWER	EXPLANATION	LEVEL
1.1			
1.1.1	✓RT ✓RT 1C$: R13,48 **OR** 0,07148:1 ✓RT ✓RT	1RT 1C$ 1RT R13,45 **NPU – no penalty if units are omitted** (2)	F1
	✓RT		
1.1.2	Cost = C$12 000 × R13,48 ✓MA Cost = R161 760 **OR** R161 760 ÷ R13,48✓MA = C$12 000✓A	1RT Canadian dollar 1MA multiplying with currency. 1MA dividing with R13,48 1A answer **AO doesn't apply.** **NPU – no penalty if units are omitted** (2)	F1
1.1.3	Total cost = Spending money + Return flight ✓MA = R24 500 + R16 879 = R41 379 ✓A ≈ R41 400 ✓R	1MA adding correct values 1A for R41 379 1R correct rounding (3)	F1
1.1.4	R16 879 Sixteen thousand, eight hundred and seventy-nine rand. ✓✓A	2A correct answer (2)	F1
1.1.5	✓RT Spending = R24 500 × $\frac{85}{100}$ ✓MCA Spending = R20 825 ✓CA **OR** ✓RT R24 500 x $\frac{15}{100}$ = R 3 675 R24 500 – R3 675 ✓ M = R20 825 ✓ CA	1RT R24 500 1MCA multiplying with 85% or 0,85 1CA R20 825 (3) 1RT R24 500 1M Subtracting 15% 1CA R20 825	F1

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Q	ANSWER	EXPLANATION	LEVEL
1.1.6	✓RT ✓M R24 500 – R20 825 = R3 675,00 **OR** ✓RT R24 500 x $\frac{15}{100}$ ✓ M = R 3 675	**CA from Q 1.1.5** 1RT R24 500 1M subtract R20 825 **AO doesn't apply.** (2) 1RT R24 500 1M Calculate 15%	F1
1.1.7	Probability (event) = $\frac{number\ of\ favourable\ outcomes/cases\ ✓A}{total\ number\ of\ possible\ outcomes/cases\ ✓A}$ **OR** Probability (event) = $\frac{number\ of\ outcomes\ ✓A}{total\ number\ of\ outcomes\ ✓A}$ **OR** Probability (event) = $\frac{number\ of\ events\ ✓A}{total\ number\ of\ events\ ✓A}$	2A correct formula (2)	P1
1.1.8	= 6 + 9 + 2 ✓MA = 17 ✓A	1MA adding all correct values 1A possible outcomes (2)	P1
1.1.9	Interest: Money earned on an investment. ✓✓D	2D define interest **Accept any valid/ reasonable answer** (2)	F1

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Q	ANSWER	EXPLANATION	LEVEL
1.2			
1.2.1	25% ✓✓ A	2A for answer with % sign(2)	D1
1.2.2	Quartile 1 = 15,8% ✓A Quartile 3 = 25% ✓A	1A for 15,8% 1A for 25% (2)	D1
1.2.3	(a) Quartile 2 ✓A (b) 50% ✓A	1A for quartile 2 1A for 50% (2)	D1
1.2.4	Canada or 15,0%✓A Ireland or 12,5% ✓A	1A for Canada/15,0% 1A for Ireland/12,5% (2)	D1
1.2.5	Selecting a country in Quartile 3 means that you select 75% of the countries that are presented. ✓✓ D **OR** Quartile 3 represents 75% of the data presented. **OR** Quartile 3 means that it is 25% less than the data presented. **OR** A number halfway between the median (middle number) and the maximum (highest number) of the data set.	2D definition of meaning **Accept any valid or reasonable answer** (2)	P1
		[30]	

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QUESTION 2

Q	ANSWER	EXPLANATION	LEVEL
2.1			
2.1.1	✓RT ✓M Income = 1 755 ÷ 13 Income = R135	1RT reading values from table 1M division **Any values in table can be used to determine R135** **No mark for answer** (2)	F1
2.1.2	A = 14 040 ÷ 135 ✓MA A = 104 ✓A B = 39 × 135 ✓MA B = R5 265 ✓A **OR** ✓MA A: 13 × 8 = 104✓A ✓MA B: 1755 × 3 = 5265✓A	1MA income divided by 135 1A 104 1MA number of masseuses times 135 1A R5 265 (4)	F2
2.1.3	✓A ✓A Income = R135 × number of masseuses **Also accept:** Income = cost per massage × number of masseuses	1A for R135 1A for number of masseuses (2)	F2
2.1.4	13 ✓RT × 15 ✓M = 195 ✓CA 195 × 135 ✓M = 26 325 ✓MCA 26 325 × 3 ✓M = R**78 975** **OR** 3 days × 15 sessions p/d = 45 sessions total 45 sessions × R135 = R6 075 R6 075 × 13 masseuses = R78 975	1RT 13 masseuses used 1M multiplying by 15 1CA 1M multiplying by 135 1MCA 1M multiplying by 3 **CA using the formula in 2.1.3 – Max of 4 marks.**	F3

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	OR 3 days × 15 sessions p/d = 45 sessions total 45 sessions × R1755 = R78 975 **OR** 15 sessions × R1 755 = R26 325 R26 325 × 3 = R78975 **NO MARK FOR ANSWER**	(6)	

Q	ANSWER	EXPLANATION	LEVEL
2.1.5	Expenses = (number of masseuses × cost for the weekend) + (number of masseuses × number of sessions × number of days × cost per session) + (cost for room at Cape Town × number of days) Expenses = (13 × 1 000) + (13 × 15 × 3 × 50) + (4 800 × 3) ✓M Expenses = 13 000 + 29 250 + 14 400 ✓M Expenses = R56 650 ✓CA Income: Expenses 78 975 ✓A : 56 650 ✓A 1,3940865 : 1 ✓S	1M multiplying of values 1M addition of expenses 1CA total expenses 1A ratio (income) 1A ratio (expenses) 1S at least income must be correct to follow up simplification **NPR** (6)	F3
2.2			
2.2.1	R1 043,55 ÷ 45 ✓MA = R23,19 ✓A **OR** R4 522,05 ÷ 195 = R23,19	1MA dividing totals by hours worked 1A final answer (2)	F2

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2.2.2	$\%\ \text{Incr.} = \frac{\text{New income} - \text{Old income}}{\text{Old income}} \times 100$ ✓SF $\%\ \text{Incr.} = \frac{4\,522{,}05 - 3\,722{,}55}{3\,722{,}55} \times 100$ ✓SF $\%\ \text{Incr.} = \frac{799{,}50}{3\,722{,}55} \times 100$ % Incr. = 21,4772132 % Incr. = 21,5% ✓CA	1SF substitution or difference in numerator 1SF denominator 1CA rounded-off percentage **Penalise if not rounded-off to one decimal place** (3)	F2
2.2.3	200 ÷ 5 ✓MA = R40/h ✓A She was paid more than the minimum wage for Saturdays in 2022. ✓J	1MA dividing correctly 1A answer of R40 J Justification (3)	F4

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Q	ANSWER	EXPLANATION	LEVEL
2.3			
2.3.1	76 033 ✓RT ÷ 12 ✓MA = R6 336,08 ✓A	1RT for 76 033 1MA dividing by 12 1A for R6 336,08 (3)	F2
2.3.2	1 329 × 100 = 132 900 ✓MA 132 900 ÷ 1 500 ✓M = 88,6 c/km ✓CA	1MA multiplying by 100 1M dividing by 1 500 1CA final answer **NPU** (3)	F3
2.3.3	Claim = Monthly fixed travelling claim + (km driven × fuel claim) + (km driven × maintenance claim) Claim = 6 336,08 + 1 500 × (159,7 + 56,3) Claim = R6 336,08 + 324 000 c Claim = R6 336,08 + R3 240 ✓M Claim = R9 576,08 ✓CA 25% = 9 576,08 × 0,25 ✓MA 25% = R2 394,02 Claim = R9 576,08 – R2 394,02 ✓M Claim = R7 182,06 ✓CA His statement is incorrect. ✓J **OR** He will be able to claim less back than he states. His claim is less than R8 825.	1M addition of all costs 1CA answer 1MA calculating 25% 1M subtracting 25% 1CA answer 1J Reasoning (6)	F4
		[40]	

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QUESTION 3

Q	ANSWER	EXPLANATION	LEVEL
3.1			
3.1.1	63,4 million – 3,8 million ✓M = 59,6 million bags ✓CA **OR** 63 400 000 – 3 800 000 = 59 600 000	1M for concept of range 1CA for answer **Penalise if the word "million" is omitted for Option 1** (2)	D2
3.1.2	✓MA 3,8; 4; 5,6; 5,7; 6.1; 7,3; 12; 14,3; 29; 63,4 Median = $\frac{6,1+7,3}{2}$ ✓M = 6,7 ✓CA	1MA arrange values 1M concept of median 1CA answer (3)	D2
3.1.3	3,8; 4; 5,6; 5,7; 6,1; **7,3**; 12; 14,3; 18,4; 29; 63,4 IQR = 18,4 – 5,6 ✓M ✓RT ✓RT = 12,8 ✓CA	1M subtracting 1RT for Q1 1RT for Q3 1CA for answer (4)	D3
3.1.4	Mexico ✓A Peru. ✓A It means that they are the lowest quarter of the top coffee producing countries in the world.✓✓J OR They produce the least amount of coffee from the top producing countries around the world.	1A for Mexico 1A for Peru 2J of a valid reason (4)	D4
3.1.5	Pie chart✓✓A	2A for identification of graph (2)	D1
3.1.6	$\frac{63,4+29+14,3+12,0+7,3\ ✓A}{169,6\ ✓CA} \times 100$ ✓M $= \frac{126}{169,6} \times 100$ = 74,29245 ... % ≈ 74% ✓CA	1A for adding top 5 1CA for total value 1M multiply with 100 1CA rounded to whole % (4)	D3
3.1.7	✓A P = $\frac{2}{10} \times 100$ ✓MA = 20% ✓CA	1A correct numerator and denominator 1MA percentage calculation 1CA answer as a % (3)	P2

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Q	ANSWER	EXPLANATION	LEVEL
3.2			
3.2.1	X **OR** Z ✓✓A	2A correct answer (2)	D1
3.2.2	Categorical ✓✓A	2A correct answer (2)	D1
3.2.3	Are you a male or female? What time of the day do you drink coffee? Are you a coffee drinker? ✓✓✓O *(Accept: Any reasonable appropriate questions)*	3O marks (3)	D2
3.2.4	Males drink more coffee early in the morning until 6 a.m. than females ✓✓J From 6 a.m. to 6 p.m. females drink more coffee than men. **OR** After 6 p.m. males drink more coffee again. ✓J	2J comparing males and females 1J justifying female coffee drinkers 6 a.m. – 6 p.m. **OR** justifying male coffee drinkers after 6 p.m. **Accept any valid or reasonable answer** (3)	D4
3.2.5	The data is discrete ✓A The data does not consist of fractions or decimals. ✓✓ J People are always whole numbers.	1A discrete 2J justification (3)	D4
3.2.6	The data would be biased.✓A It only looks at the American consumer which would be a brand specific data. ✓✓J They only took into consideration America and not the rest of the world. They only focussed on one brand. It is only a sample at one shop.	1A biased 2J explaining biased in context (3)	D4

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Q	ANSWER	EXPLANATION	LEVEL
3.3			
	<table><tr><td>High protein</td><td>Soya, **Hemp**</td></tr><tr><td></td><td></td></tr><tr><td>High calcium</td><td>**Hemp**, Almond, Coconut</td></tr><tr><td></td><td></td></tr><tr><td>High vitamin D</td><td>Soya, **Hemp**, Almond, Coconut, Rice</td></tr><tr><td></td><td></td></tr><tr><td>High vitamin A</td><td>Soya, **Hemp**, Almond, Coconut</td></tr><tr><td></td><td></td></tr><tr><td>High fibre</td><td>Soya, **Hemp**, Almond</td></tr><tr><td></td><td></td></tr><tr><td>Low sugar</td><td>Soya, **Hemp**</td></tr><tr><td></td><td></td></tr><tr><td>Low calories</td><td>**Hemp**, Almond</td></tr></table> ✓ ✓✓M ✓A **Hemp** milk qualifies in all the categories providing the highest source of protein, calcium, vitamin D, vitamin A and fibre, as well as the lowest source in sugar and calories.	3M method of comparison 1A Hemp (4)	D4
		[42]	

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QUESTION 4

Q	ANSWER	EXPLANATION	LEVEL
4.1.1	R37 480 ✓RT × 12 ✓MA = R449 760	1RT correct values 1MA Multiplying by 12 **(NO MARK FOR R449 760)** (2)	F1
4.1.2	Taxable income = annual gross income – annual pension fund contribution 449 760 – (12 × 2 614,88 ✓MA = 449 760 – 31 378,56 ✓M = R418 381,44 ✓CA **OR** R37 480 – R2 614,88 ✓MA = R34 865,12 R34 865,12 x 12 ✓M = R418 381,44 ✓CA	MA calculate annual pension M subtracting pension CA taxable income MA subtracting the pension M multiplying by 12 CA taxable income (3)	F2
4.1.3	Bracket 3 ✓F Tax = R70 532 + 31% × (418 381,44 – 337 800) ✓SF Tax = R70 532 + 0,31 × (80 581,44) Tax = R70 532 + R24 980,25 Tax = R95 512,25 ✓CA Tax = R95 512,25 – R15 714 ✓RT – R8 613 ✓M Tax = R71 185,25 ✓CA Monthly = R71 185,25 ÷ 12 ✓MA Monthly = R5 932,10 ✓CA	**CA from 4.1.2** 1F correct bracket 1SF substitution 1CA answer 1RT using both rebates 1M subtracting rebate 1CA answer 1MA divide annual tax by 12 1CA monthly tax (8)	F3
4.1.4	R13 123,28 × 12✓M = R157 479,36 ✓CA Tax threshold: 2022 → R151 100 2023 → R157 900 In 2022 his income is more than the threshold, but in **2023 his income is below** ✓J the threshold, thus he **does not have to pay income tax and her statement is correct**.✓J	1M calculating annual taxable income 1CA answer 1J 2023 income below 1J Statement is correct (4)	F4

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Q	ANSWER	EXPLANATION	LEVEL
4.1.5	The fixed amount is derived from the maximum amount that can be claimed from the previous tax bracket, in this case, bracket 2 Tax = 40 680 + 26% (353 100 ✓RT – 226 000) ✓SF Tax = 40 680 + 0,26 × 127 100 ✓S Tax = 40 680 + 33 046 ✓S Tax = 76 726	1RT using correct tax bracket for calculation 1SF correct substitution 2S simplification of values (4)	F2
4.2			
4.2.1	✓RT Payment = 10 000 + (1 985 × 60) Payment = 10 000 + 119 100 ✓M Payment = R129 100 ✓CA	1RT use deposit 1M adding deposit and instalment 1CA answer (3)	F2
4.2.2	R129 100 – R79 000✓M = R50 100 ✓CA His statement is correct. ✓J	**CA from 4.2.1** 1M subtraction 1CA difference 1J reasoning (3)	F2
4.2.3 (a)	✓MA Interest = $\frac{10\,\%}{4}$ = 2,5% per quarter ✓A Interest 1st quarter: R90 000 × 1,025 ✓MA = R92 250 ✓A Interest 2nd quarter: = R92 250 × 1,025 = R94 556,25 ✓CA Interest 3rd quarter = R94 556,25 × 1,025 = R96 920,16 ✓CA	1MA concept of quarterly (divide by 4) 1A for interest rate of 2,5% 1MA multiply with 2,5%, 102,5% or 1,025 1A correct answer 1CA answer 1CA answer (6)	F3

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Q	ANSWER	EXPLANATION	LEVEL
4.2.3 (b)	Price for 2024: ✓MA R139 800 × $\frac{1,25}{100}$ = R1 747,50 Price for 2024: R139 800 + R1 747,50 = R141 547,50 ✓A Price for 2025: R141 547,50 × $\frac{0,5}{100}$ = R707,7375 ✓M Cost for 2024: R141 547,50 + R707,7375 = R142 255,24 ✓CA It would not be wise for him to wait because the cost of the vehicle will increase meaning that interest will also increase. ✓J **OR** It will be wise to wait so that he could save more money to afford the vehicle.	1MA multiplying with 1,25% or 101,25% or 1,0125 1A answer 1M multiply with 0,5% or 100,5% or 1,005 1CA answer 1J reasoning (5)	F4
		[38]	
		TOTAL: 150	

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EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2023

MATHEMATICAL LITERACY P1

MARKS: **150**

TIME: **3 hours**

This question paper consists of 14 pages, including 1 annexure.

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURE to answer QUESTION 3.1.
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.

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QUESTION 1

1.1 Olwethu wants to open a bank account and decides to research various banks.
TABLE 1 below shows the banking fees for different services offered to young people by four of South Africa's largest banks.

TABLE 1: BANKING FEES FOR SERVICES OFFERED FROM FOUR BANKS

	BANK A	BANK B	BANK C	BANK D
Monthly Fee	R10,00	R26,00	R9,99	Free
Withdrawal (ATM)	R1,90 per R100	Free	First R1 250 free, then R1,85 per R100, or part thereof	R7,00
Withdrawal at bank counter	R1,60	Free	R2,00	R2,00
Withdrawal at payment point	First R3 000 free, then R0,95 per R100	Free	R1,85 per R100	First R3 000 free, then R1,00 per R100
Debit order	Free	Free	Free	Free
Bank statement	Free	R1,50	R1,20	R1,00

1.1.1 Write down the cheapest bank based on the monthly fees. (2)

1.1.2 Which withdrawal method is the most expensive one for a client withdrawing R1 200 from Bank A? (2)

1.1.3 Determine how much the banking fees will be if Olwethu chooses Bank C and withdraws R1 600 from the bank's ATM. (3)

1.1.4 Choose the correct percentage below.

The probability of choosing a bank with counter withdrawal costs of less than R2,00 is:

A 25%
B 50%
C 100% (2)

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1.2 TABLE 2 below shows the mid-year population estimates for South Africa in 2022.

TABLE 2: MID-YEAR POPULATION ESTIMATES BY POPULATION GROUP AND SEX FOR 2022

POPULATION AGE GROUP	MALE	FEMALE
Black African	23 985 479	25 085 330
Coloured	2 601 932	2 737 987
Indian/Asian	794 882	---------
White	2 242 589	2 396 679
Total	**29 624 882**	**30 980 110**

[Adapted from Statista]

Use the above information to answer the questions that follow.

1.2.1 Calculate the number of Indian/Asian females. (2)

1.2.2 Write down the total number of Coloured males in words. (2)

1.2.3 Determine the percentage of the female population represented by Black Africans. (3)

1.2.4 Are the population estimates data numerical or categorical? (2)

1.3 A clothing store is having an annual sale on all items in the shop. In addition, a customer receives a further 50% discount on the cheapest item bought.
Mrs Botha chooses a vanity bag for R249,95 and a pair of sandals on sale for R135,95.



Sale price R249,95



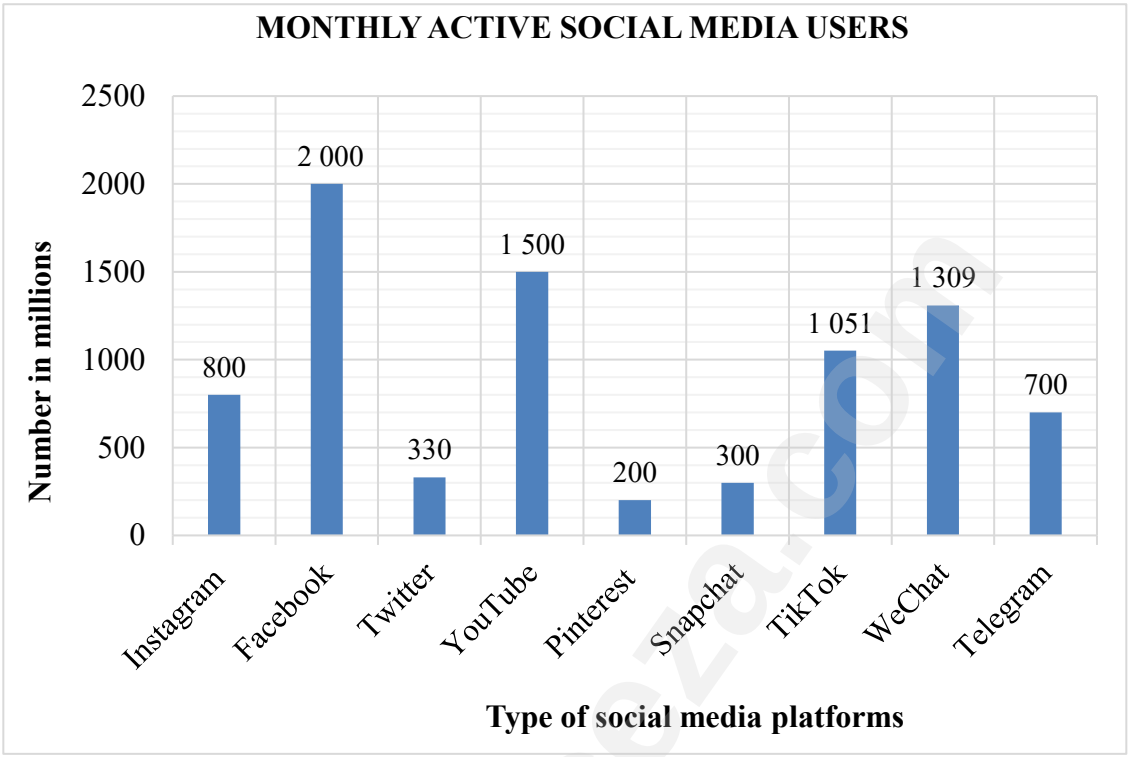
Sale price R135,95

Calculate the amount Mrs Botha pays for her purchases in total. (3)

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1.4 The number of active social media users is given in the graph below.



[Adapted from Statista]

Use the graph above and answer the questions that follow.

1.4.1 Which social media platform is used the most on a monthly basis? (2)

1.4.2 Name the type of graph used above to illustrate the monthly types of social media platforms. (2)

1.4.3 Calculate the difference between the third most popular and the least popular social media platform. (3)

1.4.4 Name the social media platform that has four times more active monthly users than the least popular platform. (2)

[30]

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QUESTION 2

2.1 Load shedding is a reality in South Africa at present. Mr Rudolph decided to buy a generator for his family to use during load shedding.
Given below is an advertisement for a generator that he intends to buy.



Ryobi 7,5 KVA 4-stroke key-start petrol generator

NOW R13 499

WAS R13 999 Save R500

The company selling this generator offers the following payment options illustrated in TABLE 3.

TABLE 3: PAYMENT OPTIONS FOR RYOBI GENERATOR

OPTION 1	Cash Payment
OPTION 2	Hire purchase agreement: 18% deposit and 16,25% p.a. interest charged on the balance. This balance must be paid off in equal instalments over 12 months.

Use the above information to answer the questions that follow.

2.1.1 Calculate the percentage discount offered on the Ryobi 7,5 KVA generator. (3)

2.1.2 Mr Rudolph stated that he has budgeted R1 000 per month to buy the generator using Payment option 2.

Verify, showing ALL calculations, whether R1 000 per month will be enough for the monthly instalment. (7)

2.1.3 Mr and Mrs Rudolph are considering paying cash for the generator and dividing the payment in ratio 5 : 3 respectively. How much will Mrs Rudolph contribute towards the payment? (3)

2.2 The generator uses Petrol 93 or Petrol 95 fuel. TABLE 4 below shows the fuel prices in South Africa in January 2023.

TABLE 4: SOUTH AFRICAN FUEL PRICES IN JANUARY 2023

	INLAND	COASTAL
Petrol 93	R21,10	R20,45
Petrol 95	R21,40	R20,75

[Adapted from http://aa.co.za – fuel pricing]

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

2.2.1 Calculate the difference in the inland and coastal price of Petrol 95. (2)

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2.2.2 Petrol 95 decreased by R2,06 per litre in January 2023. Calculate the inland cost of petrol 95 in December 2022. (2)

2.2.3 Calculate the total cost of fuel the generator will use in a 31-day-month if the generator:

- Uses 2,2 litres of petrol 93, per hour
- Is used twice a day and lasts for 2,5 hours each session
- The coastal rate is applied (4)

2.3 Currently, there is a very serious water shortage in the Nelson Mandela Bay (NMB) District. Dams are running dry and therefore the responsible use of water is very important. TABLE 5 below shows the Nelson Mandela Bay regular tariffs for normal water availability as well as tariffs that are applicable during a water shortage.

TABLE 5: NMB WATER TARIFFS 2021/2022

	Number of kilolitres used per day	**Tariffs during water shortage Rands/kℓ (VAT exclusive)**	**Tariffs for normal water availability Rands/kℓ (VAT inclusive)**
Step 1	0 up to 0,3 kℓ	R20,81	R19,10
Step 2	More than 0,3 kℓ up to 0,5 kℓ	R31,80	R20,72
Step 3	More than 0,5 kℓ up to 0,8 kℓ	R63,60	R28,96
Step 4	More than 0,8 kℓ up to 1,0 kℓ	R106,00	R49,99
Step 5	More than 1,0 kℓ up to 1,6 kℓ	R159,00	R91,43
Step 6	More than 1,6 kℓ	R318,00	R121,90

VAT – Value Added Tax

[Adapted from NMB Municipality tariff book]

Use the information given in TABLE 5 and answer the questions that follow.

2.3.1 Write down the maximum number of kℓ of water that a customer can use per day in Step 1. (2)

2.3.2 Calculate the amount of VAT paid per kilolitre in Step 3 during normal water availability. (3)

2.3.3 Mr Rudolph claims that if they use 0,73 kℓ of water per day while there is a water shortage, he pays less than R30 per day, including VAT, for the water.

Is Mr Rudolph's claim valid? Show ALL calculations in your answer. (7)

2.3.4 Give a possible reason why the Rudolph family is likely to use more water during December 2023. (2)

[35]

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QUESTION 3

3.1 The state of the country's economy is monitored on monthly basis by conducting various surveys. These results are used to establish how businesses are doing in the current state of the economy.

TABLE 6 on the ANNEXURE, gives a summary of retail trade sales for various retailers, for the period April 2022 to September 2022.

Use the information in TABLE 6, given on the ANNEXURE, to answer the questions that follow.

3.1.1 Calculate the total sales for hardware, paint, and glass in August 2022. (2)

3.1.2 Which type of retailer showed the greatest increase in sales between April and May? (2)

3.1.3 Calculate, rounded to the nearest billion, the value of **A** if the mean sales for the month of June 2022 was 14 275, 86 million. (5)

3.1.4 Calculate the median number of sales for food, beverages, and tobacco in specialised stores. (4)

3.1.5 Write down the sales for general dealers of April to the sales for Pharmaceuticals and medical goods of August, as a unit ratio, rounded off to two decimal places. (2)

3.1.6 Determine the percentage change of the total retail trade sales between April and September.

You may use the formula:

$$\textit{Percentage change} = \frac{\textit{Difference in monthly sales}}{\textit{Original monthly sales}} \times 100\%$$

(4)

3.1.7 Calculate the probability, as a decimal fraction, of randomly selecting retail trade sales for less than R4 400 million. Round your answer off to three decimal places. (3)

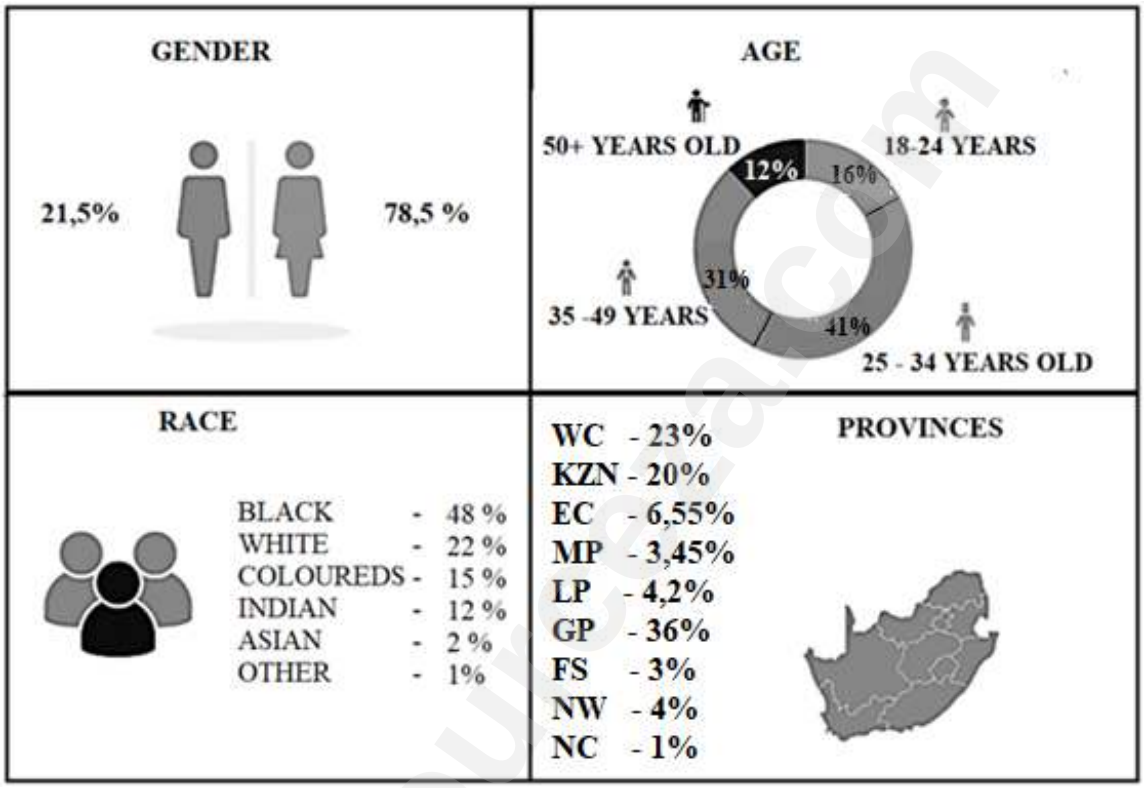
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3.2 South Africans are doing more and more of their shopping online. A survey was done where people had to indicate if they were satisfied with their online shopping experience. Given below are the results of the survey.

RESULTS OF THE SURVEY REGARDING SATISFACTION WITH ONLINE SHOPPING ACCORDING TO GENDER, RACE, AGE, AND PROVINCE



[Adapted from marklives.com]

Use the above information to answer the questions that follow.

3.2.1 Which age group is least satisfied with their online shopping experience? (2)

3.2.2 Write down the percentage of satisfied female shoppers, as a simplified common fraction. (2)

3.2.3 Calculate the interquartile range for the provincial satisfaction.

You may use the formula: $IQR = Q_3 - Q_1$ (5)

[31]

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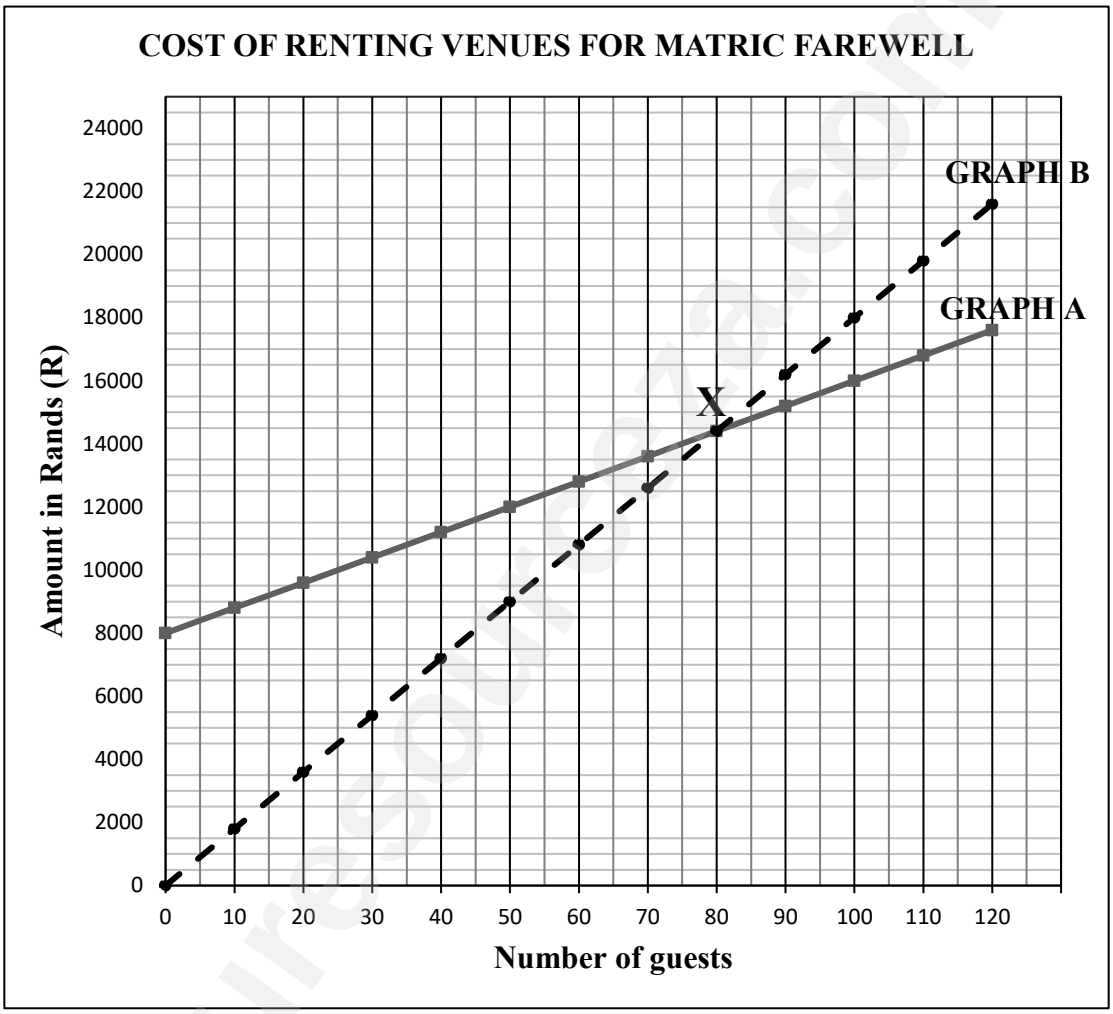
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QUESTION 4

4.1 Mrs Mxoli is on the committee that is in charge of planning the matric farewell. The committee is considering two different venues for the farewell. The cost of these two venues is given in the graph below.

Venue 1 – Charges a fixed rental fee of R8 000 and an additional fee of R80,00 per person.

Venue 2 – Charges a rate of R180,00 per person.



Use the above information to answer the questions that follow.

4.1.1 Name the graph that represents Venue 2. Only write the letter **A** or **B** in your answer. (2)

4.1.2 Provide an equation for calculating the cost of Venue 1. (2)

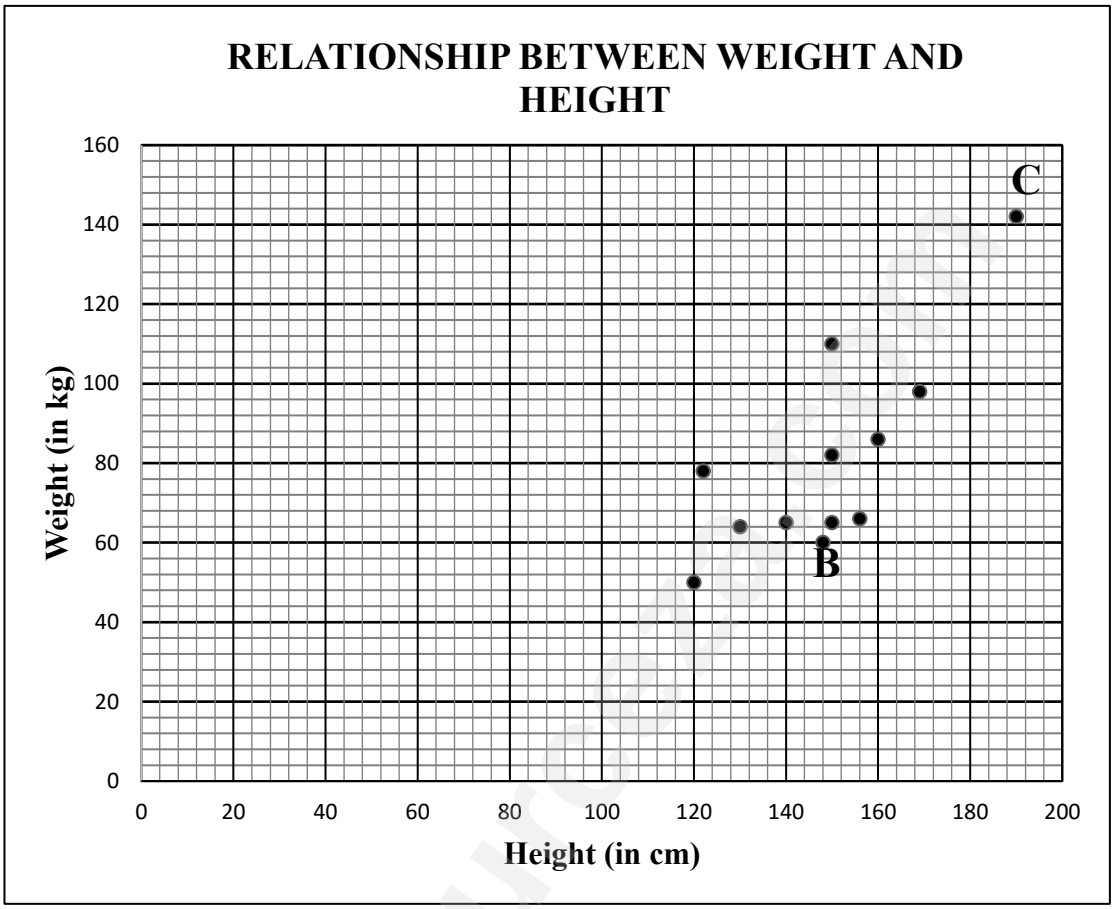
4.1.3 Explain what is happening at the point labelled **X** on the graph. (2)

4.1.4 The committee eventually opted to go with Venue 2. Verify, showing ALL calculations, that with 180 guests attending, they would have paid R10 000 less, had they chosen to go with Venue 1 instead. (6)

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4.2 The graph given below shows the relationship between the height and weight of a high school cricket team.



Weight Status	BMI
Underweight	Less than 18,5
Normal weight	18,5–24,9
Overweight	25–29,9
Obese	More than 30

$$BMI = \frac{weight\ in\ kg}{(height\ in\ m)^2}$$

Use the above information to answer the questions that follow.

4.2.1 What does BMI stand for? (2)

4.2.2 What do you call a point that lies a distance away from all the other points in a data set, as seen with point **C** above? (2)

4.2.3 Name the type of graph used above. (2)

4.2.4 Write down the weight of the team member that is 120 cm tall. (2)

4.2.5 Comment on the weight status of the person labelled **B**. (5)

4.2.6 What is the probability of selecting a person below 120 kg, who is shorter than 1,5 m?
Give your answer as a percentage, rounded to one decimal place. (3)
[28]

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QUESTION 5

5.1 Mrs Xego, 58 years old, earns a gross salary of R46 523,16 per month. She contributes 7,5% of her gross salary toward a pension fund, and also pays an amount of R1 600 per month to a charity organisation. Both of these contributions are non-taxable.

TABLE 7 below shows the rates of tax that individuals in South Africa are liable to pay for the 2022/2023 tax year.

TABLE 7: TAX RATES FOR INDIVIDUALS – 1 March 2022 to 28 February 2023

RATES APPLICABLE TO INDIVIDUALS	
Taxable income (R)	**Rates of Tax (R)**
1 – 226 000	18% of taxable income
226 001 – 353 100	40 680 + 26% of taxable income above 226 000
353 101 – 488 700	73 726 + 31% of taxable income above 353 100
488 701 – 641 400	115 762 + 36% of taxable income above 488 700
641 401 – 817 600	170 734 + 39% of taxable income above 641 400
817 601 – 1 731 600	239 452 + 41% of taxable income above 817 600
1 731 601 and above	614 192 + 45% of taxable income above 1 731 600

Age Category	**Rebates**	**Tax threshold**
* Below age 65	R16 425	R91 250
* Age 65 to below 75	R9 000	R141 250
* Age 75 and older	R2 997	R157 900

[Source: https//www.sars.gov.za]

Use the information in TABLE 7 above to answer the questions that follow.

5.1.1 Write out the full name of the organisation that is responsible for collecting tax in South Africa. (2)

5.1.2 Explain what the tax threshold amount refers to. (2)

5.1.3 Calculate Mrs Xego's annual taxable income. (4)

5.1.4 Mrs Xego's friend earns an annual taxable income of R502 185,60. She claims that she pays more than one quarter (¼) of her annual taxable income towards tax each year.

Verify, showing ALL calculations, whether her statement is valid or not. (7)

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5.2 Mrs Xego has researched requirements to relocate to New Zealand. She requires a skilled migrant visa, that costs NZ$4 880, and her husband, who would like to start his own business, needs an entrepreneur resident visa, which costs NZ$6 860. An entrepreneur is required to invest a capital amount of at least NZ$500 000 in order to qualify for this visa.

The table below shows the exchange rates for 3 countries on 23 February 2023.

TABLE 8: EXCHANGE RATES ON 23 FEBRUARY 2023

US dollar	$1	18,28 ZAR
British pound	£1	22,04 ZAR
New Zealand dollar	NZ$0,088205	1 ZAR

[Adapted from www.immigrationnewzealand]

Use the information in TABLE 8 above to answer the questions that follow.

5.2.1 Determine the exchange rate of the New Zealand dollar (NZ$) in terms of the South African Rand (ZAR) on the 23 February 2023, in the form NZ$. (3)

5.2.2 Calculate the total cost of the visas (to the nearest R100) that Mrs Xego and her husband must pay, should they decide to relocate. (4)

5.2.3 Mr Xego's brother stays in America and has offered to lend the capital amount to him, at an interest rate of 8,75% compounded annually, over two years.

Calculate how many New Zealand dollars Mr Xego will have to repay to his brother after two years. (4)

[26]

TOTAL: 150

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ANNEXURE: QUESTION 3.1

TABLE 6 below gives a summary of retail trade sales for various retailers, for the period April 2022 to September 2022.

TABEL 6: RETAIL TRADE SALES AT CURRENT PRICES BY TYPE OF RETAILER (R MILLION)

TYPE OF RETAILER	APRIL 2022	MAY 2022	JUNE 2022	JULY 2022	AUG 2022	SEPT 2022
General dealers	42 716	47 459	47 609	43 677	48 319	49 220
Food, beverages, and tobacco in specialised stores	8 978	8 462	8 298	9 050	8 542	8 607
Pharmaceuticals and medical goods, cosmetics and toiletries	8 073	7 517	**A**	8 038	7 987	7 211
Textiles, clothing, footwear, and leather goods	16 994	16 903	15 055	15 255	14 135	14 013
Household furniture, appliances, and equipment	4 242	4 291	4 219	4 419	4 374	4 121
Hardware, paint, and glass	7 536	8 943	8 235	8 864	------	8 959
All other retailers	9 963	9 866	9 331	9 036	9 114	8 982
TOTAL	**98 502**	**103 440**	**-----**	**98 339**	**101 447**	**101 113**

[Adapted from statssa]

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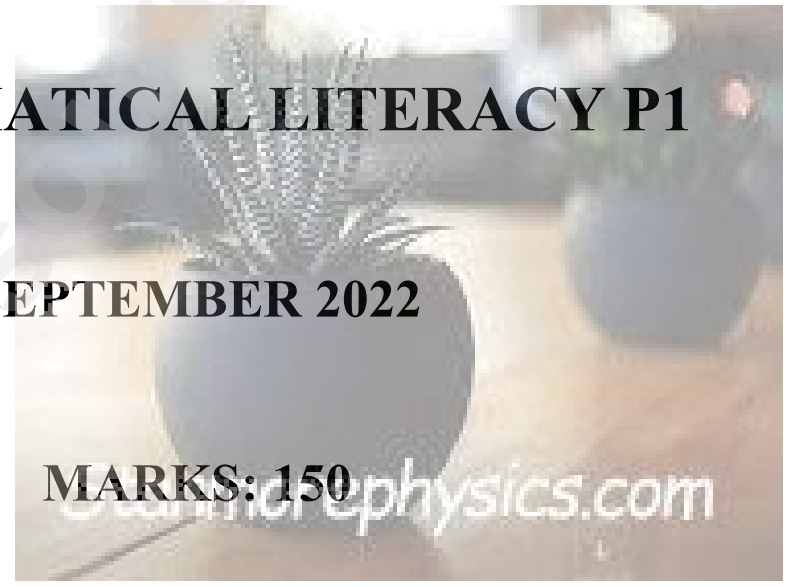
education

Department of Education
FREE STATE PROVINCE



PREPARATORY EXAMINATION

GRADE 12



MATHEMATICAL LITERACY P1

SEPTEMBER 2022

MARKS: 150

TIME: 3 HOURS

This question paper consists of 14 pages,
1 answer sheet and an addendum with 3 annexures.

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INSTRUCTIONS AND INFORMATION

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

2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

   - ANNEXURE A for QUESTION 2.1
   - ANNEXURE B for QUESTION 3.1
   - ANNEXURE C for QUESTION 3.2

3. Answer QUESTION 5.3.4 on the attached ANSWER SHEET.
   Write your name and surname in the spaces provided on the ANSWER SHEET. Hand in the ANSWER SHEET with your ANSWER BOOK.

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

5. Start EACH question on a NEW page.

6. An approved calculator (non-programmable and non-graphical) may be used unless stated otherwise.

7. Show ALL calculations clearly.

8. Round off ALL final answers appropriately according to the given context, unless stated otherwise.

9. Indicate units of measurement, where applicable.

10. Pictures and diagrams are NOT necessarily drawn to scale unless stated otherwise.

11. Write neatly and legibly.

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QUESTION 1

1.1 TABLE 1 below shows the fees charged at Marie Secondary School.

TABLE 1: SCHOOL AND HOSTEL FEES FOR 2020

Account holder
Katleho Titus

Account for the year is payable on 1 February. Arrangement for quarterly or monthly (over 11 months) payments can be made.

School Fees

Date	Description	Debit	Credit
01/01/2020	Balance brought forward		R32,55
06/01/2020	School fees 2020	R12 540,00	
13/01/2020	EFT bank deposit		R3 135,00
03/04/2020	EFT bank deposit		R3 135,00
10/07/2020	EFT bank deposit		R3 135,00
30/10/2020	EFT bank deposit		R3 135,00

Hostel Fees

Date	Description	Debit	Credit
01/01/2020	Balance brought forward		R00,00
06/01/2020	Hostel fees 2020	R20 350,00	
13/01/2020	EFT bank deposit		R5 100,00
03/04/2020	Hostel cancelled		R15 250,00
01/12/2020	Total due		R00,00

[Adapted from actual school statement]

Use TABLE 1 above to answer the questions that follow.

1.1.1 Explain the meaning of the term *debit* in this context. (2)

1.1.2 Write down the frequency of the school fee payments. (2)

1.1.3 Identify a descriptor that indicates Katleho did not stay at home during the first three months of 2020. (2)

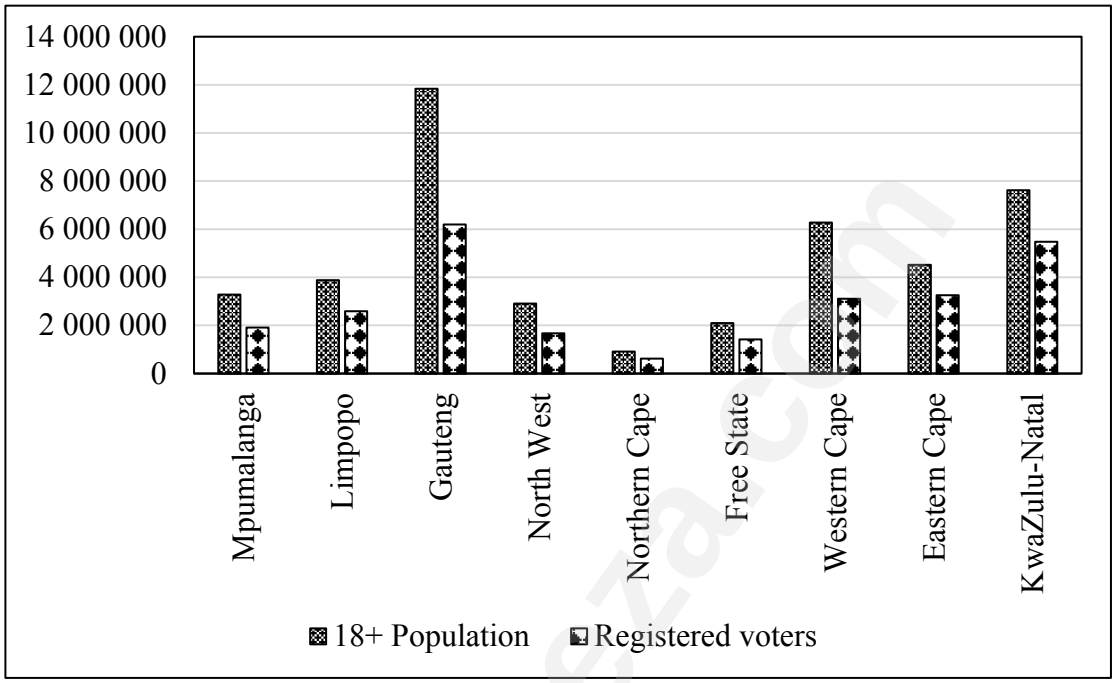
1.1.4 Determine the school fee amount to be paid if the monthly payment option was used. (3)

1.1.5 Calculate the total amount paid for school and hostel fees in 2020. (3)

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1.2 The graph below indicates the number of registered voters per province for the 2021 municipal elections.



[Source:elections.org.za]

Use the graph above to answer the questions that follow.

1.2.1 Identify the type of graph drawn. (2)

1.2.2 Write down the minimum age required for voting. (2)

1.2.3 Determine the probability of randomly selecting a province where the number of registered voters is higher than the voting population. (2)

1.2.4 Express the number 5 471 539 in words. (2)

1.2.5 Write down the number of provinces taking part in the municipal elections. (2)



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1.3 Buying a cell phone is sometimes not easy as one has to compare the storage capacities and the price.

The information below indicates the prices charged for different storage capacities of the same brand of cell phone.



Capacity	Cash price
256 GB	R25 899
128 GB	R23 699
512 GB	R30 899
1 TB	R35 299

NOTE: GB stands for gigabyte
TB stands for terabyte
1000 GB = 1TB

Study the information above to answer the questions that follow.

1.3.1 Write down the cash price of a cell phone with the lowest capacity. (2)

1.3.2 Arrange the cell phone capacity in descending order. (2)

1.3.3 Determine the price difference between a 512 GB and a 256 GB cell phone. (2)

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1.3.4 Round R23 699 to the nearest thousand rands. (2)

[30]

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QUESTION 2

2.1 South Africans employ just over one million domestic workers across the country. In 2019 the National Minimum Wage was introduced, which stated that domestic workers must be paid at least a minimum of R15,00 an hour.

Tables 2 and 3 on ANNEXURE A, illustrate the scenario for one month, for three domestic workers, after the introduction of the National Minimum Wage.

Use TABLES 2 and 3 on ANNEXURE A and the above information to answer the questions that follow.

2.1.1 Explain the meaning of the term *income* in this context. (2)

2.1.2 State whether the domestic workers have a surplus or a deficit. (2)

2.1.3 Calculate the missing values **A** and **B**. (3)

2.1.4 Show with calculations that Domestic worker 1 budgets 77% more for food than electricity. (5)

2.1.5 Determine the probability (as a common fraction) of not selecting a domestic worker who worked more than 20 days. (2)



2.1.6 Provide TWO possible reasons why all the workers spend the same amount on food. (4)

2.1.7 Domestic worker 2 claimed that if the National Minimum Wage can increase to R27,00 per hour, there can be money left after paying all the expenses.

Verify, showing all calculations, whether the claim is valid. (5)

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2.2 During a particular month, Domestic worker 1's employer, Debbie, used 25 kℓ of water.



TABLE 4 shows the residential water tariffs, including VAT.

TABLE 4: RESIDENTIAL WATER TARIFFS INCLUDING VAT

Block	Tariff in kilolitres (kℓ)	Tariff in Rands per kilolitre (kℓ)
Block 1	0–6 kℓ	R10,34
Block 2	7–15 kℓ	R24,54
Block 3	16–30 kℓ	R27,63
Block 4	31–60 kℓ	R33,10
Block 5	61 or more kℓ	R38,91

[Source: Mangaung.co.za]

Use TABLE 4 and 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 number of kℓ that can be charged in Block 2. (2)

2.2.3 Calculate the amount that Debbie will pay for the water used. (5)

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2.3 Debbie wants to buy a water purifying system for her drinking water. The following options are available for her.

PAYMENT OPTIONS	PICTURE OF A WATER PURIFYING SYSTEM
Option 1: The cash price is R2 299 **Option 2:** • R216 per month • The amount includes insurance and service fee • 24 months to pay • Interest 17,25% p.a. **Option 3:** • R211 per month • Amount excludes insurance and service fee • 12 months • Interest 17,5% p.a.	

[Source: www.takealot.com]

Use the information above to answer the questions that follow.

2.3.1 Write the acronym *p.a.* in full. (2)

2.3.2 Calculate the amount of interest p.a. charged in option 3. (3)

2.3.3 Debbie told her domestic worker that she would pay more than double the cash price if she chose to buy using option 2.

Verify, showing all calculations, if Debbie's statement is correct. (5)

[42]

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QUESTION 3

3.1 Agriculture plays a crucial role in food security by supplying the basic food products to keep millions of people fed every day. In South Africa, the industry produces various products, from beef and poultry to maize, fruits, and vegetables.

TABLE 5 on ANNEXURE B shows the commercial farming land per province in South Africa in 2017.

Use TABLE 5 on ANNEXURE B to answer the questions that follow.

3.1.1 State why the data for the farming land is regarded as continuous. (2)



3.1.2 Write down the province with the largest grazing land. (2)

3.1.3 The mean number of farmworkers in South Africa in 2017 was 84 180,33. Hence determine **A**, the number of farmworkers in the Free State in 2017. (4)

3.1.4 Calculate the value of **B**. (3)

3.1.5 A farmer stated that in Western Cape, there are 27 farmworkers for every farm and that in Gauteng, there are 16 farm workers for every farm.

Determine, using unit ratios, whether the statement is correct. (6)

3.1.6 Determine the range of the arable land. (3)



3.2 The pie chart on ANNEXURE C shows the types and percentages of the livestock population (in %) in South Africa in November 2019.

Use the information on ANNEXURE C to answer the questions that follow.

3.2.1 Calculate the actual number of the buffalo population. (4)

3.2.2 Give an example of livestock that can be classified as OTHER. (2)

3.2.3 Determine the probability (as a decimal) of randomly selecting beef cattle from the percentage cattle livestock population. (3)

3.2.4 There was an increase of 15,7% in the total livestock population between November 2019 and November 2020.

Calculate the total livestock population in November 2020. (3)

[32]

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QUESTION 4

4.1 Many South Africans use the weekly advertising in the local newspapers to help with shopping decisions.

TABLE 6 below indicates the number of copies distributed and average monthly household income around some areas in Pretoria.

TABLE 6: NUMBER OF COPIES DISTRIBUTED AND AVERAGE MONTHLY HOUSEHOLD INCOME

Area	Number of distributed copies	Average readership in %	Average monthly household income in Rands (R)
Pretoria East	79 210	76	30 685
Centurion	60 350	61	24 695
Pretoria North	40 100	62	28 435
Moot	33 630	76	20 330
Pretoria West	20 250	70	20 250
Pretoria Far North	29 000	80	14 660
Mamelodi	30 000	76	16 360

[Source: rekord.co.za]

Use TABLE 6 and the information above to answer the question that follow.

4.1.1 State the frequency of receiving this newspaper in Pretoria. (2)

4.1.2 Write down the mode for the average readership. (2)

4.1.3 Determine the interquartile range (IQR) for the average monthly household income in Pretoria.

You may use the formula: **IQR = Q3 – Q1** (5)

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4.2 The cost for a quarter of a page to advertise in a local newspaper in the United Kingdom (UK) is £250.

The exchange rate between the South African rand and the United Kingdom pound on 15 November 2021 is given below:

SOUTH AFRICAN RAND (ZAR)	UNITED KINGDOM POUND STERLING (£)
20,38	1
1	0,049

[Source: www.xe.com]

Use the information above to answer the questions that follow.

4.2.1 Write down the exchange rate of the South African rand to the UK pound in the form:
R1 = … (2)

4.2.2 Determine (in rands) the price for advertising in a local newspaper. (3)

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4.3 Mr Malinga, a 52-year-old resident at Pretoria North, earned a monthly taxable income of R35 357,00 during the 2021/22 tax year. During this time, Mr Malinga was a member of a medical fund for himself, his wife and his two children.

Table 7 below shows the tax table for the 2021/22 tax year.

TABLE 7: TAX RATES FOR 2021/22 TAX YEAR

TAX BRACKET	TAXABLE INCOME	TAX RATES (in R)
1	1–216 200	18% of the taxable income
2	216 201–337 800	38 916 + 26% of taxable income above 216 200
3	337 801–467 500	70 532 + 31% of taxable income above 337 800
4	467 501–613 600	110 739 + 36% of taxable income above 467 500
5	613 601–782 200	163 335 + 39% of taxable income above 613 600
6	782 201–1 656 600	229 089 + 41% of taxable income above 782 200
7	1 656 601 and above	587 593 + 45% of taxable income above 1 656 600

[Adapted from www.sars.gov.za]

Table 8 below shows the tax rebates and medical tax credits for the 2021/22 tax year.

TABLE 8: TAX REBATES AND MEDICAL TAX CREDITS FOR 2021/22 TAX YEAR

TAX REBATES	
Primary	R15 714
Secondary (65 and older)	R8 613
Tertiary (75 and older)	R2 871
MEDICAL TAX CREDITS PER MONTH	
Main member	R332
First member	R332
Each additional member	R224

[Adapted from www.sars.gov.za]

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Use TABLES 7 and 8 above to answer the question that follow.

4.3.1 Determine Mr Malinga's annual taxable income. (2)

4.3.2 Show with calculations that Mr Malinga will receive R13 344 medical tax credits for the 2021/22 tax year. (4)

4.3.3 Calculate the amount of tax Mr Malinga must pay for 2021/22 tax year. (6)

[26]

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QUESTION 5

Mogodu Monday has become a popular South African weekly occasion wherein many celebrate the most unpopular day of the week by turning it into an enjoyable time over great food with family and friends. During this day, mogodu is often enjoyed with a side of warm pap, samp or dumpling.

A small business sells a plate of mogodu for R50,00.

NOTE WELL	PLATE OF MOGODU SERVED WITH PAP
Mogodu is a combination of chopped tripe and intestines served as a stew. **Pap** is a traditional porridge made from maize meal.	

The cost to make one plate of mogodu is given by the following formula:

Total cost = R1 200 + 26 m where m = number of plates

[Adapted from #ReMojaKaofela@MojaCafe]

Use the information above to answer the questions that follow.

5.1 Use the equation above to determine the number of plates sold if the total cost is R2 760. (4)

5.2 Construct a formula that can be used to calculate the income from selling mogodu, in the form:

Income = … (2)

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5.3 TABLE 9 below shows the total cost and income from selling plates of mogodu.

TABLE 9: COST AND INCOME OF SELLING PLATES OF MOGODU

Number of plates	**0**	**10**	**30**	**50**	**70**	**90**	**100**
Cost (R)	1 200	1 460	1 980	2 500	3 020	3 540	3 800
Income (R)	0	500	1 500	2 500	3 500	4 500	5 000

5.3.1 Explain the term *break even* in this context and identify the number of plates that must be sold to break even. (3)

5.3.2 The manager of the small business stated that she could make a $\frac{8}{25}$ profit on 100 plates of mogodu sold.

Verify, showing ALL calculations, if his statement is correct. (6)

5.3.3 Write down the type of graph that can be used to represent the information on TABLE 9 above. (2)

5.3.4 The income graph has already been drawn on the attached ANSWER SHEET.

Use the information from Table 9 to draw on the same set of axes a graph representing the cost of plates of mogodu. (3)
[20]

TOTAL: 150

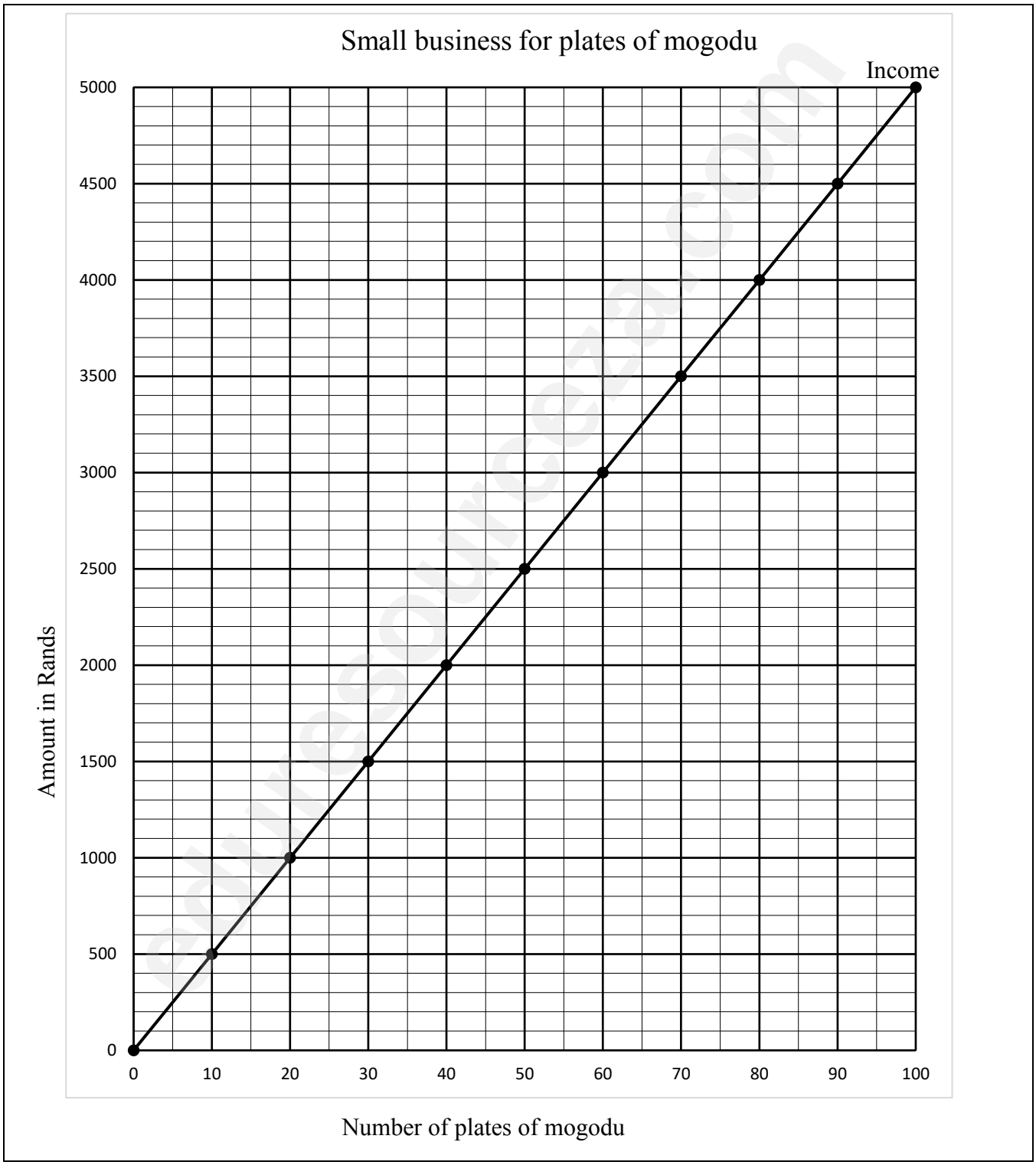
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ANSWER SHEET

QUESTION 5.3.4

NAME AND SURNAME:_____



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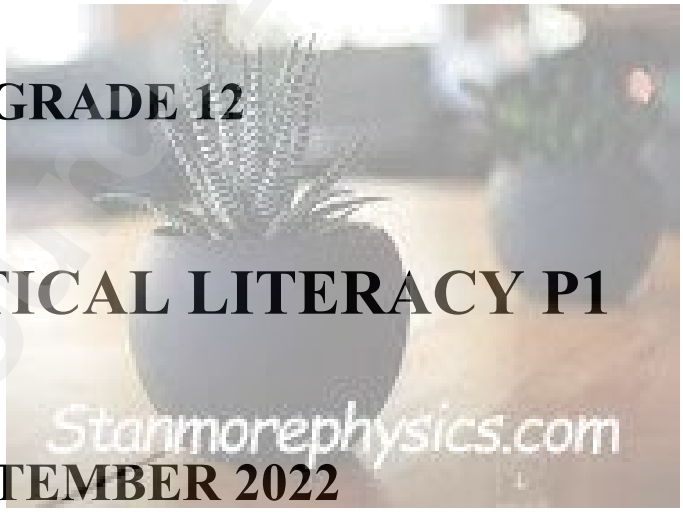
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Department of Education
FREE STATE PROVINCE

PREPARATORY EXAMINATION

GRADE 12



MATHEMATICAL LITERACY P1

SEPTEMBER 2022

MARKS: 150

ADDENDUM

This addendum consists of 4 pages with 3 annexures.

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ANNEXURE A

QUESTION 2.1

TABLE 2: INCOME OF DOMESTIC WORKERS

Income	**Domestic worker 1**	**Domestic worker 2**	**Domestic worker 3**
Number of days worked	21	15	15
Number of hours worked per day	8	8	5
Income	**R2 520**	**R1 800**	**R1 125**

TABLE 3: EXPENDITURES OF DOMESTIC WORKERS

	Domestic worker 1		**Domestic worker 2**		**Domestic worker 3**	
Household expenses		% of income		% of income		% of income
Transport to work (return trip)	R1 092,00	43,3%	R780,00	43,3%	R780,00	69,3%
Prepaid electricity (350kWh)	R529,34	21,0%	**A**	29,4%	R529,34	47,1%
Total for transport + electricity	R1 621,34	64,3%	R1 309,34	72,7%	R1 309,34	116,4%
Money remaining for other expenses	R898,66		R490,66		**B**	
Food for 4 people	R2 473,75		R2 473,75		R2 473,75	
Surplus/deficit	-R1 575,09	-63,7%	-R1 983,09	-80,2%	-R2 658,09	-107,5%

[Source:businesstech.co.za]

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ANNEXURE B

QUESTION 3.1

TABLE 5: COMMERCIAL FARMING LAND IN HECTARES AND PERCENTAGE PER PROVINCE IN 2017

Province	Number of farms	Number of farm workers	Total Farming land		Grazing land		Arable land		Other land	
			Hectares	%	Hectares	%	Hectares	%	Hectares	%
Western Cape	6 937	186 997	4 098 779	8,8	2 738 371	7,5	1 003 642	13,2	356 765	15,7
Eastern Cape	4 214	65 151	5 713 528	12,3	5 266 438	14,4	357 810	4,7	89 278	3,9
Northern Cape	4 829	69 070	17 229 260	37,1	16 358 215	44,8	671 400	8,8	199 643	8,8
Free State	7 951	**A**	7 636 020	16,4	5 161 833	14,1	2 454 122	32,2	20 062	0,9
KwaZulu-Natal	3 103	96 206	1 843 926	4,0	917 312	2,5	524 053	6,9	402 559	**B**
Northwest	4 920	57 758	5 323 682	11,5	3 474 878	9,5	1 118 509	14,7	730 294	32,2
Gauteng	2 291	36 517	385 317	0,8	197 878	0,5	180 349	2,4	7 088	0,3
Mpumalanga	2 823	73 318	2 467 007	5,3	1 177 535	3,2	943 163	12,4	346 307	15,3
Limpopo	3 054	97 478	1 722 938	3,7	1 244 477	3,4	361 341	4,7	117 119	5,2
South Africa	**40 122**	**…**	**46 420 458**	**100**	**36 536 940**	**100**	**7 614 392**	**100**	**2 269 115**	**100**

[Source: www.statista.com]

NOTE: **Grazing land** is used for livestock and game farming, and **Arable land** is used for crop production.

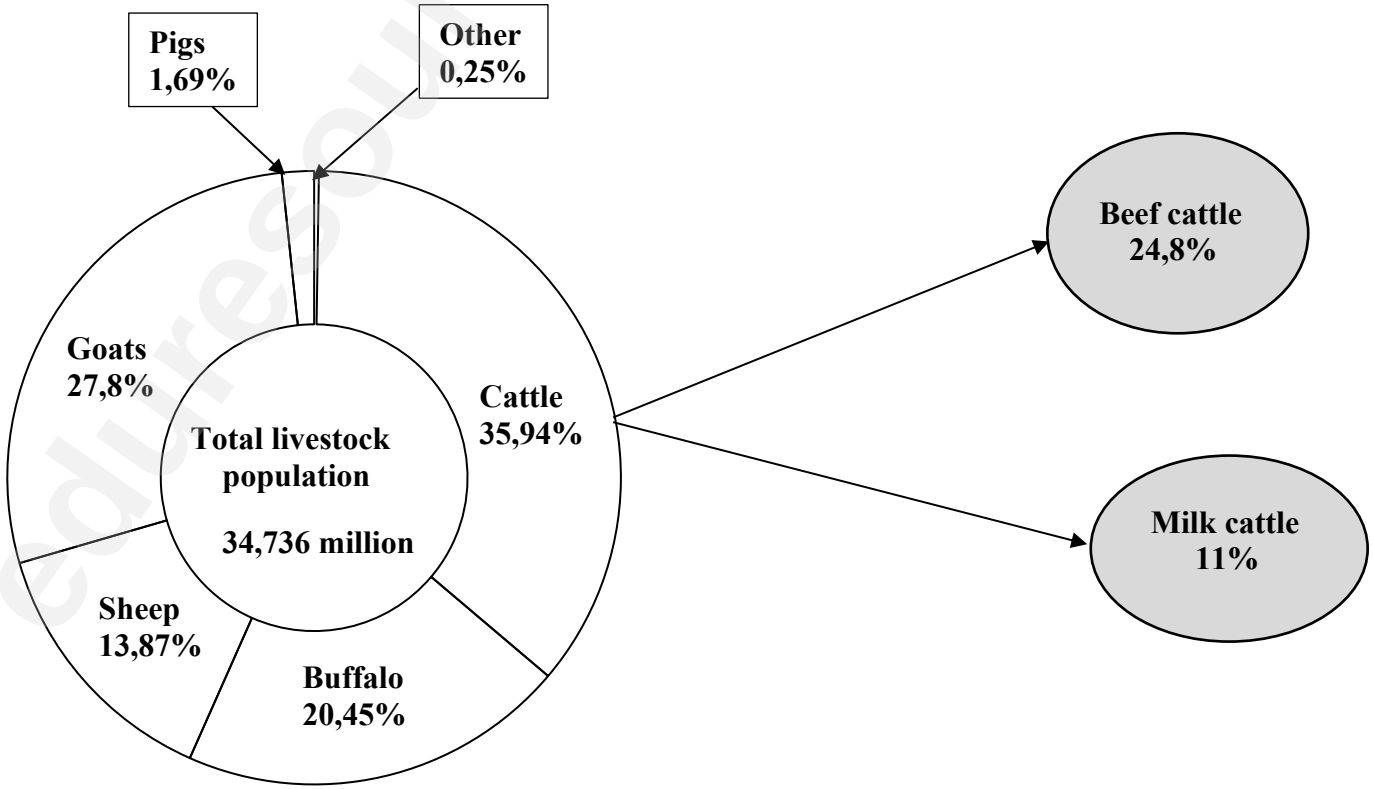
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ANNEXURE C

QUESTION 3.2

LIVESTOCK POPULATION (IN %) IN SOUTH AFRICA IN NOVEMBER 2019.



NB: Livestock is the domesticated animals raised in an agricultural setting/farm to produce commodities such as meat, eggs, milk, fur, leather, etc.

[Source: www.dalrrd.gov.za]

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PREPARATORY EXAMINATION/
VOORBEREIDENDE EKSAMEN

GRADE 12/*GRAAD 12*

MATHEMATICAL LITERACY P1/
WISKUNDIGE GELETTERDHEID V1

SEPTEMBER 2022

MARKING GUIDELINES/
NASIENRIGLYNE

MARKS/*PUNTE*: 150

Symbol/*Kode*	**Explanation/*Verduideliking***
M	Method/*Metode*
MA	Method with accuracy/*Metode van akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/graph/diagram/*Lees vanaf tabel/grafiek/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in'n formule*
O	Opinion/Example/Definition/Explanation/*Opinie/Voorbeeld/Definisie/Verduideliking*
P	Penalty, e.g., for no units, incorrect rounding off, etc./*Penalisasie, bv. vir geen eenhede,verkeerde afronding ens.*
R	Rounding off/A*fronding*
NPR	No penalty for correct rounding/*Geen penalisering vir korek afronding nie*
NPU	No penalty for the units/*Geen penalisering vir eenhede nie*
AO	Answer only, if correct, full marks/*Slegs antwoord, indien korrek, volpunte*
MCA	Method with consistent accuracy/*Metode met volgehoue akkuraatheid*

These marking guidelines consists of 13 pages./
Hierdie nasienriglyne bestaan uit 13 bladsye.

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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.
- If the candidate presents any extra solution when reading from a graph, table layout plan and map, then penalise for every extra item presented.
- General principle of marking, if the candidate makes one mistake, he loses one mark.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou by die tweede berekeningsfout op.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart neem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *Die algemene beginsel van merk as 'n leerder een fout maak verloor hy een punt.*

QUESTION/*VRAAG* 1 [30 MARKS/*PUNTE*]		**ANSWER ONLY = FULL MARKS**	
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
1.1.1	**Debit** is the amount charged for school fees/ ✓✓O **Debit** is the amount charged for hostel fees ***Debiet*** *is die bedrag gehef vir skoolfooie/* ***Debiet*** *is die bedrag gehef vir koshuisfooie*	2O correct explanation (2)	F L1
1.1.2	Quarterly ✓✓A *Kwartaalliks*	2A correct answer (2)	F L1
1.1.3	Hostel fees ✓✓A *Koshuisfooi*	2RT correct descriptor (2)	F L1
1.1.4	Monthly payment = $\frac{\text{R12 540}}{11}$ ✓A ✓A *Maandelikse betaling* = R1 140 ✓CA	1A numerator 1A denominator 1CA monthly payment **NPU** (3)	F L1
1.1.5	Total amount = R12 540 + R5 100 ✓M ✓RT *Totale bedrag* = R17 640 ✓CA	1RT correct amounts 1M adding amounts 1CA simplification **NPU** (3)	F L1

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Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.2.1	✓A ✓A Compound bar graph *Saamgestelde staafgrafiek*	1A compound 1A bar (2)	D L1
1.2.2	✓✓A 18 years OR/OF 18 ✓✓A *18 jaar*	2A correct age NP for omitting years (2)	D L1
1.2.3	✓✓A Impossible/ 0/ 0% *Onmoontlik*	2A probability (2)	P L1
1.2.4	Five million four hundred and seventy-one thousand five hundred and thirty-nine ✓✓A *Vyfmiljoen vierhonderd een en sewentigduisend vyfhonderd nege en dertig*	2A number in words (2)	D L1
1.2.5	9✓✓A	2A correct number (2)	D L1
1.3.1	R23 699✓✓A	2A correct answer (2)	F L1
1.3.2	1 TB 512 GB 256 GB 128 GB ✓✓MA	2A correct values in the correct order (2)	D L1
1.3.3	✓MA Difference = R30 899 – R25 899 *Verskil* = R5 000✓CA	1MA subtracting correct amounts 1CA correct number of litres (2)	F L1
1.3.4	R24 000✓✓A	2R rounding **NPU** (2)	F L1

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QUESTION/*VRAAG* 2 [42 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
2.1.1	**Income** is the amount earned for the domestic work done. ✓✓O ***Inkomste*** *is die bedrag verdien vir huiswerk wat gedoen is.*	2O explanation (2)	F L1
2.1.2	Deficit/*Tekort* ✓✓O	2O explanation (2)	F L1
2.1.3	**A** = $\frac{29,4}{100}$ × R1 800 ✓MA = R529,20 ✓CA **B** = R1 125 – R1 309,34 = - R184,34 ✓CA	1MA calculating percentage 1CA value of A 1CA value of B (3)	F L3
2.1.4	✓RT Food % = $\frac{R2\,473,75}{R2\,520}$ × 100 ✓M *Voedsel* = 98 % ✓CA Difference = 98% – 21,0% ✓M *Verskil* = 77% ✓CA	1RT correct values 1M calculating percentage 1CA simplification 1M subtracting values 1CA simplification (5)	F L3
2.1.5	Probability = $\frac{2}{3}$ ✓A ✓A *Waarskynlikheid*	1A numerator 1A denominator (2)	P L2
2.1.6	They buy the same food items ✓✓O *Hulle koop dieselfde voedselitems* **OR/*OF*** They buy from the same shop ✓✓O *Hulle koop by dieselfde winkel* **OR/*OF*** The food is for four people ✓✓O *Die voedsel is vir vier persone* **OR/*OF*** They have same size family ✓✓O *Hulle families is dieselfde grootte*	2O opinion 1 2O opinion 2 (4)	F L4

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2.1.7	Income = R27,00 × 8 × 15 ✓M *Inkomste* = R3 240 ✓CA Remaining money after expenses/ *Oorblywende geld na uitgawes* R3 240 – R1 309,34 – R2 473,75 ✓RT = -R543,09 ✓CA Her claim is not valid ✓O *Haar eis is nie geldig nie*	1RT correct values 1M multiplying values 1CA income 1CA difference 1O conclusion (5)	F L4

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.2.1	Value added tax ✓✓O *Belasting op toegevoegde waarde*	2O explanation (2)	F L1
2.2.2	9 kℓ ✓✓A	2A correct answer (2)	F L1
2.2.3	First 6 kℓ = 6 × R10,34 ✓MA *Eerste* = R62,04 ✓A Second 9 kℓ = 9 × R24,54 *Tweede* = R220,86 ✓CA Last 10 kℓ = 10 × R27,63 *Laaste* = R276,30 Total amount = R62,04 + R220,86 + R276,30 ✓M *Totale bedrag* = R559,20 ✓CA	**CA from Question 2.2.2** 1MA multiplying values 1A amount for first 6 kℓ 1CA amount for 9 kℓ 1M adding three values 1CA total amount (5)	F L3
2.3.1	Per annum ✓✓O *Per jaar*	2O explanation (2)	F L1
2.3.2	Interest = $\frac{17,5}{100}$ ✓A × R2 299 ✓MA *Rente* = R402,33 ✓CA	1A correct percentage 1MA calculating percentage 1CA simplification (3)	F L2
2.3.3	Option 2 = R216 × 24 ✓MA *Opinie 2* = R5 184 ✓A Difference = R5 184 – R2 299 ✓MCA *Verskil* = R2 885 ✓CA She is correct ✓O *Sy is reg*	1MA multiplying values 1A simplification 1MCA subtracting values 1CA 1O conclusion (5)	F L4

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QUESTION/*VRAAG* 3 [32 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
3.1.1	The data is measured and can include decimals. ✓✓O *Die data word gemeet en kan desimale insluit*	2O correct reason (2)	D L1
3.1.2	Northern Cape/*Noord-Kaap* ✓✓RT	2RT correct province (2)	D L1
3.1.3	✓MA 84 180,33 = (186 997 + 65 151 + 69 070 + **A** + 96 206 + 57 758 + 36 517 + 73 318 + 97 478)/9 ✓M 84 180,33 × 9 = 682 495 + **A** 757 622,97 = 682 495 + **A** ✓M **A** = 757 622,97 − 682 495 = 75 127,97 = 75 128 ✓CA	1MA mean concept 1M multiplying by 9 1M subtracting 1CA rounded value of **A** (4)	D L2
3.1.4	✓RT **B** = $\frac{402\,559}{2\,269\,115}$ × 100 ✓M = 17,7% ✓CA **OR/OF** ✓M ✓RT **B** = 100−15,7−3,9−8,8−0,9−32,2−0,3−15,3−5,2 = 17,7% ✓CA	1RT correct values 1M calculating percentage 1CA simplification 1RT correct values 1M subtracting from 100 1CA simplification **AO** (3)	D L2

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3.1.5	Western Cape/*Wes-Kaap* ✓RT ✓M 6 937: 186 997 1: 27 ✓CA Gauteng 2 291: 36 517 ✓M 1:16 ✓CA She is correct ✓O *Sy is reg*	1RT correct values 1M correct order 1CA simplification 1M correct values in the correct order 1CA simplification 1O conclusion (6)	D L4
3.1.6	Range = 2 454 122 − 180 349 ✓RT ✓M *Waardeversameling* ✓CA = 2 273 773	1RT correct values 1M subtracting values 1CA simplification **AO** (3)	D L2
3.2.1	Buffalo population = $\frac{20,45}{100}$ × 34,736 million ✓RT ✓M *Buffelbevolking* ✓CA ✓U = 7,104 million **OR/*OF*** Buffalo population = $\frac{20,45}{100}$ × 34 736 000 ✓RT ✓M ✓M *Buffelbevolking* = 7 103 512 ✓CA	1RT correct percentage 1M multiplying by correct number 1CA simplification 1U writing million 1RT correct percentage 1M writing the number in full 1M multiplying by correct amount 1CA simplification **AO** (4)	D L2
3.2.2	Chicken/horses/donkeys/camels/ducks ✓✓O *Hoenders/perde/donkies/kamele/eende* **Any other relevant livestock/** **Enige relevante lewendehawe**	2O valid example (2)	D L1
3.2.3	Probability = $\frac{24,8\%}{35,94\%}$ ✓A ✓A *Waarskynlikheid* = 0,69 ✓CA	1A numerator 1A denominator 1CA simplification **NPR** **AO** (3)	P L2

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.2.4	New population $= \frac{15,7}{100} \times 34,736$ million ✓MA *Nuwe bevolking* $= 5,454$ million ✓CA ∴ (34,736 + 5,454) million = 40,190 million ✓CA **OR/*OF*** New population $= \frac{15,7}{100} \times 34\ 736\ 000$ ✓MA *Nuwe bevolking* ✓CA = 5 453 552 ∴ 34 736 000 + 5 453 552 = 40 189 552 ✓CA **OR/*OF*** New population $= \frac{115,7}{100} \times 34,736$ million ✓A ✓M *Nuwe bevolking* = 40,190 million ✓CA **OR/*OF*** New population $= \frac{115,7}{100} \times 34\ 736\ 000$ ✓A ✓M *Nuwe bevolking* = 40 189 552 ✓CA	1MA calculating percentage 1CA simplification 1CA new population 1MA calculating percentage 1CA simplification 1CA new population 1A increased percentage 1M calculating percentage 1CA new population 1A increased percentage 1M calculating percentage 1CA new population **AO** (3)	D L2

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QUESTION/*VRAAG* 4 [26 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
4.1.1	weekly ✓✓RT *weekliks*	2RT correct answer (2)	D L1
4.1.2	76 ✓✓RT	2RT correct mode (2)	D L2
4.1.3	✓ A 14 660 16 360 20 250 20 330 24 695 28 435 30 685 Median = 20 330 ✓ A *Mediaan* Q1 = 16 360 ✓ A Q3 = 28 435 IQR = Q3 – Q1 = 28 435 – 16 360 ✓ SF = 12 075 ✓ CA	1A arranging values 1A median 1A quartile 1 OR quartile 3 SF substituting into the formula 1CA simplification (5)	D L3
4.2.1	R1 = £0,049 ✓✓A	2A correct exchange rate (2)	F L1
4.2.2	Price = $\frac{£250}{£0,049}$ ✓A × R1 ✓MA *Prys* = R5 102,04 ✓A	1A correct values 1MA dividing values 1A simplification (3)	F L2

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.3.1	Annual taxable income = R35 357,00 × 12 ✓MA *Jaarlikse belasbare inkomste* = R424 284 ✓A	1MA multiplying by 12 1A simplification (2)	F L1
4.3.2	✓RT ✓M Monthly Medical tax credits = (R332 × 2) + (R224 × 2) ✓M *Maandelikse Mediese belastingkrediete* = R664 + 448 = R1 112 ∴ Yearly MTC/ = R1 112 × 12 ✓M ∴ *Jaarlikse MBK* = R13 344	1RT correct values 1M multiplying by 2 1M adding 1M multiplying by 12 (4)	F L3
4.3.3	Annual tax/*Jaarlikse belasting* = ✓A R70 532 + 31% of taxable income above/*van belasbare inkomste bo* 337 800 ✓SF R70 532 + 31% (R424 284 – R337 800) R70 532 + (31% × R86 484) ✓CA R70 532 + R26 810,04 = R97 342,04 ✓CA Tax payable/*Belasting betaalbaar* ✓MCA = R97 342,04 – R15 714 – R13 344 = R68 284,04 ✓CA	1A correct tax bracket 1SF correct substitution 1CA simplification 1CA tax before rebates 1MCA subtracting both rebates 1CA simplification (6)	F L3

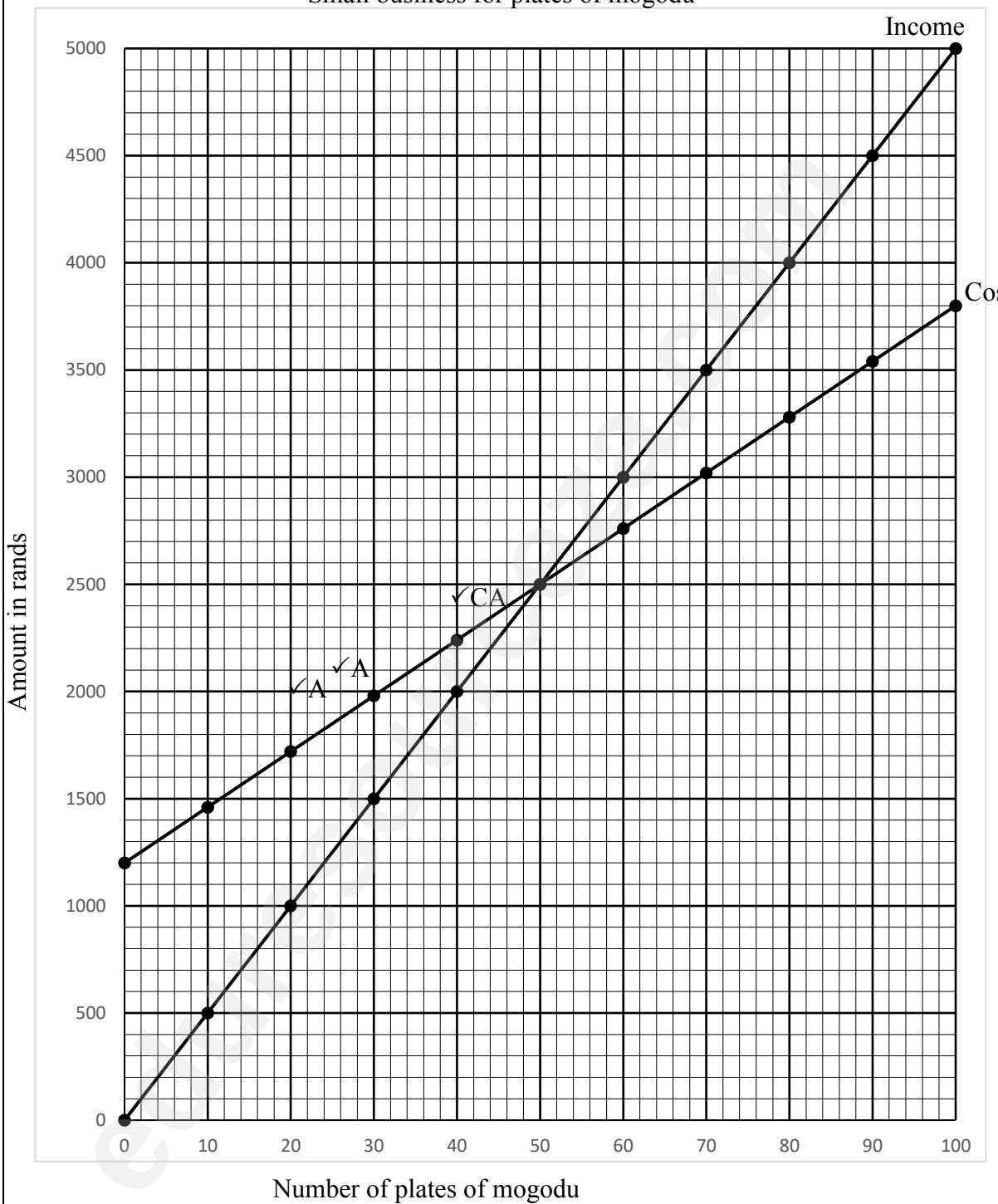
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QUESTION/*VRAAG* 5 [20 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
5.1	Total cost/*Totale koste* = R1 200 + 26m ✓SF R2 760 = R1 200 + 26m ✓MA R2 760 – R1 200 = 26m ✓CA R1 560 = 26m M = 60✓CA	 1SF correct substitution 1MA subtracting R1 200 1CA simplification 1CA number of plates (4)	F L2
5.2	✓✓A Income/*Inkomste* = R50 × number of plates/*aantal borde*	2A correct formula (2)	F L2
5.3.1	**Break-even** is where the cost of making mogodu is equal to the income of selling mogodu/ ***Gelykbreek*** *is waar die koste om mogodu te maak gelyk is aan die inkomste om mogodu te verkoops* ✓✓O ✓RT 50	2O correct explanation (2) 1RT correct break even (1)	F L2
5.3.2	Profit for 100 plates/*Wins per 100 borde* = ✓RT ✓MA R5000 – R3800 = R1 200 ✓CA Fraction of 100 plates/*Breuk vir 100 borde* $= \frac{1200}{3800}$ ✓M $= \frac{8}{25}$ ✓CA Her claim is correct ✓O *Haar eis is korrek*	 1RT correct values 1MA subtracting correct values 1A correct profit 1M numerator and denominator 1CA simplification 1O conclusion (6)	F L4
5.3.3	Line graph/*Lyngrafiek* ✓✓A	2A correct graph (2)	D L2

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5.3.4	Small business for plates of mogodu  1A for any 3 points plotted correctly/*1A vir enige 3 punte korrek geplot* 1A for other 7 points plotted correctly/*1A vir enige 7 punte korrek geplot* 1CA joining points/*1CA aansluitingspunte*	D L2

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TOTAL/*TOTAAL*: 150

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GRADE 12

SEPTEMBER 2023

MATHEMATICAL LITERACY P1 MARKING GUIDELINE

MARKS: **150**

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RM	Reading from a table/a graph/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 correct rounding

This marking guideline consists of 9 pages.

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QUESTION 1 [30 MARKS]			
Ques.	**Solution**	**Explanation AO: FULL MARKS**	**T&L**
1.1.1	Bank D ✓✓RT	2RT identify correct bank (2)	F L1
1.1.2	ATM withdrawal ✓✓RT	2RT (2)	F L1
1.1.3	R1 600 – R1 250 = R350 ✓M ∴ R1,85 × ($\frac{350}{100}$) = R1,85 × 4 ✓MA = R7,40 ✓A	1M for subtracting 1MA multiplying correct value 1A answer (3)	F L1
1.1.4	50% or B ✓✓A	2A answer (2)	P L1
1.2.1	Total = 30 980 110 – (25 085 330 + 2 737 987 + 2 396 679) ✓M = 760 114 ✓A	1M subtracting correct values 1A answer (2)	D L1
1.2.2	Two million, six hundred and one thousand, nine hundred and thirty-two ✓✓A	1A correct words (2)	D L1
1.2.3	% = $\frac{25\,085\,330}{30\,980\,110}$ × 100 ✓RT ✓M = 80,97% ✓A	1RT correct values 1M multiplying by 100 1A percentage (3)	D L1
1.2.4	Numerical ✓✓A	2A correct answer (2)	D L1
1.3.1	Total = R249,95 + (50% × R135,95) ✓MA = R249,95 + R67,98 ✓M = R317,93 ✓A	1 MA multiplying correct value by 50% 1M adding correct values 1A correct total (3)	F L1
1.4.1	Facebook ✓✓RT	2RT correct social media platform (2)	D L1
1.4.2	Bar graph ✓✓A	2A correct graph (2)	D L1
1.4.3	✓RT Difference = 1 309 million – 200 million ✓M = 1 109 million ✓CA	1RT correct values 1M subtraction 1CA difference (3)	D L1
1.4.4	Instagram ✓✓RT	2RT correct social media platform (2)	D L1
		[30]	

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QUESTION 2: FINANCE [35 MARKS]			
Ques.	**Solution**	**Explanation/Marks AO: FULL MARKS**	**T&L**
2.1.1	✓RT % discount = $\frac{500}{13\,999} \times 100$ ✓M = 3,57% ✓CA	1RT correct values 1M multiplying by 100 1CA simplification **Accept 3,6%** (3)	F L2
2.1.2	Deposit = $\frac{18}{100} \times 13\,499$ = R2 429,82 ✓M Outstanding balance = R13 499 – R2 429,82 = R11 069,18 ✓M ✓MA Total due = $(\frac{16{,}25}{100} \times R11\,069{,}18 \times 1\text{ yr}) + R11\,069{,}18$ = R1 798,74 + R11 069,18 = R12 867,92 ✓A Monthly payment = $\frac{R12\,867{,}92}{12}$ ✓M = R1 072,32 ✓CA ∴ No, it will not be enough. ✓O	1M calculating deposit 1M outstanding balance 1MA multiplying correct value by percentage 1A total due 1M divide by 12 1CA final answer 1O reason (7)	F L4
2.1.3	✓MA Mrs Rudolph = $\frac{3}{8} \times$ R13 499 ✓M = R5 062,13 ✓CA	1MA correct ratio method 1M multiplying by cash price 1CA answer (3)	F L2

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Ques.	Solution	Explanation	T&L
2.2.1	Difference = R21,40 – R20,75 ✓MA = R0,65 ✓A	1MA subtracting correct values 1A correct answer (2)	F L1
2.2.2	Cost = R21,40 + R2,06 ✓MA = R23,46 ✓A	1MA adding correct values 1A simplification (2)	F L2
2.2.3	Total fuel used: = (2,2ℓ × 2,5 hrs) × 2 ✓M = 11 ℓ per day ✓A 11ℓ × 31 = 341ℓ per month ✓CA Total cost = R20,45 × 341ℓ = R6 973,45 ✓CA	1M fuel per session 1A fuel per day 1CA amount of fuel per month 1CA cost for the month (4)	F L3
2.3.1	0,3 kℓ ✓✓RT	2RT correct value (2)	F L2
2.3.2	R28,96 ÷ 1,15 ✓MA = R25,18 VAT = R28,96 – R25,18 ✓M = R3,78 ✓A	1M dividing by 1,15 1M subtracting 1A total VAT (3)	F L2
2.3.3	Cost: ✓M Step 1: 0,3 kℓ × R20,81 = R6,24 ✓A Step 2: 0,2 kℓ × R31,80 = R6,36 ✓CA Step 3: 0,23 kℓ × R63,60 = R14,63 ✓CA Total = R27,23 × 1,15 ✓M = R31,31 ✓CA ∴ Incorrect/Invalid ✓O **OR** Cost: ✓M Step 1: 0,3 kℓ × R20,81 = R6,24 ✓A Step 2: 0,2 kℓ × R31,80 = R6,36 ✓CA Step 3: 0,23 kℓ × R63,60 = R14,63 ✓CA VAT = R27,23 × 15% = R4,0845 ✓CA Total = R27,23 + R4,0845 = R31,31 ✓CA ∴ Incorrect/Invalid ✓O	1M step 1 1A step 1 1CA step 2 1CA step 3 1M adding VAT 1CA total including VAT 1O statement 1M step 1 1A step 1 1CA step 2 1CA step 3 1CA adding VAT 1CA cost 1O opinion (7)	F L4 F L4
2.3.4	Holidays, therefore home more often. Visitors during holidays. ✓✓O Any valid reason	2O reason (2)	F L4
		[35]	

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QUESTION 3 [31 MARKS]			
Ques.	**Solution**	**Explanation**	**T&L**
3.1.1	Total: ✓M 101 447 – (48 319 + 8 542 + 7 987 + 14 135 + 4 374 + 9 114) = 101 447 – 92 471 = 8 976 million **OR** 8 976 000 000 ✓CA	1M subtracting correct values 1CA simplification (2)	D L2
3.1.2	General dealers ✓✓RT	2RT correct retailer (2)	D L1
3.1.3	$14\,275{,}86 = \frac{92\,747 + A}{7}$ ✓SF $14\,275{,}86 \times 7 = 92\,747 + A$ ✓M $99\,931{,}02 - 92\,747 = A$ ✓M $7\,184{,}02 = A$ ✓CA $\therefore A = 7$ billion ✓R	1SF substitution 1M multiplying 1M subtracting 1CA simplification 1R rounding off to the nearest billion (5)	D L3
3.1.4	Median: ✓M ✓RT 8 298 ; 8 462 ; **8 542 ; 8 607** ; 8 978 ; 9 050 $= \frac{8\,542 + 8\,607}{2}$ ✓M = 8 574,5 million **OR** 8 574 500 000 ✓CA	1M correct order 1RT correct values in order 1M median concept 1CA simplification (4)	D L2
3.1.5	42 716 : 7 987 ✓RT 1 : 0,19 ✓A OR 5,35 : 1	1RT correct values 1A simplification to unit ratio (2)	D L2
3.1.6	✓RT ✓RT % change $= \frac{101\,113 - 98\,502}{98\,502} \times 100\%$ ✓MA = 2,65% ✓CA	1RT correct value April 1RT correct value Sept 1MA correct % calculation 1CA simplification (4)	D L2

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Ques.	Solution	Explanation	T&L
3.1.7	$\frac{5}{42}$ ✓RT ✓RT ✓M = 0,119 ✓R	1RT numerator 1RT denominator 1R rounding off to 3 decimal places (3)	P L2
3.2.1	50 + years ✓✓RT	2RT correct age group (2)	D L1
3.2.2	$\frac{785}{1\,000}$ ✓RT $= \frac{157}{200}$ ✓S	1RT correct percentage 1S simplification (2)	D L2
3.2.3	1; 3 ; 3,45 ; 4 ; **4,2** ; 6,55 ; 20 ; 23 ; 36 ✓M $Q1 = \frac{3 + 3,45}{2}$ = 3,225 ✓M $Q3 = \frac{20 + 23}{2}$ = 21,5 ✓M IQR = Q3 – Q1 = 21,5 – 3,225 ✓M = 18,28% ✓CA	1M values in correct order and finding median 1M for Q1 1M for Q3 1M subtracting 1CA answer (5)	D L3
		[31]	

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QUESTION 4 [28 MARKS]			
Ques.	**Solution**	**Explanation**	**T&L**
4.1.1	B ✓✓RT	2RT correct answer (2)	F L1
4.1.2	✓A ✓A Cost = 8000 + 80 × number of people	2A correct answer (2)	F L2
4.1.3	✓A The point where both venues cost exactly the same for the same number of people. ✓A	1A cost the same 1A same amount of people (2)	F L1
4.1.4	Venue 2: R180 × 180 guests ✓M = R32 400 ✓A Venue 1: R8000 + R80 × 180 ✓M = R22 400 ✓A Difference = R32 400 – R22 400 = R10 000 ✓CA Valid ✓O	1M multiply rate by guests 1A simplification 1M correct multiplication 1A simplification 1CA difference 1O opinion (6)	F L4
4.2.1	Body Mass Index ✓✓A	2A correct answer (2)	D L1
4.2.2	Outlier ✓✓A	2A correct answer (2)	D L1
4.2.3	Scatterplot ✓✓A	2A correct graph (2)	D L1
4.2.4	50 kg ✓✓RT	2RT weight (2)	D L2
4.2.5	$\text{BMI} = \frac{\text{weight in kg}}{\text{height in m}^2}$ $= \frac{60\text{ kg}}{(148\text{ cm})^2}$ ✓RT ✓RT $= \frac{60\text{ kg}}{(1{,}48\text{ m})^2}$ ✓C $= 27{,}39\text{ kg/m}^2$ ✓CA ∴ Overweight ✓O	1RT weight 1RT height in cm 1C height in m 1CA correct BMI 1O weight status (5)	D L3
4.2.6	$\frac{5}{12}$ ✓RT ✓RT = 41,7% ✓R	1RT numerator 1RT denominator 1R correct percentage rounded to 1 dec. place (3)	P L2
		[28]	

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QUESTION 5: FINANCE, DATA HANDLING [26 MARKS]			
Ques.	**Solution**	**Explanation**	**T&L**
5.1.1	South African Revenue Services ✓✓A	2A correct name (2)	F L1
5.1.2	Minimum amount that an individual must earn in order to pay tax ✓✓O **OR** up to that amount you do not pay tax **OR** if you earn less than that amount you do not pay tax	2O correct explanation (2)	F L1
5.1.3	Annual Taxable Income = Gross – Pension – Charity Pension = 7,5% × R46 523,16 = R3 489,24 ✓M Tax Income = R46 523,16 – R3 489,24 – R1 600 ✓M = R41 433,92 Annual Tax Income = R41 433,92 × 12 ✓M = R497 207,04 ✓CA	1M calculating pension 1M subtracting values from gross 1M multiplying by 12 1CA simplification (4)	F L3
5.1.4	Annual Tax ✓RT ✓SF = 115 762 + 36% (502 185,60 – 488 700) = 115 762 + 36% (13 485,60) = 115 762 + 4 854,82 = 120 616,82 – 16 425 ✓M = R104 191,82 ✓CA Quarter of taxable income = R502 185,60 × ¼ ✓M = R125 546,40 ✓A ∴ **Invalid** ✓O **OR** $\frac{104\ 191,82}{502\ 185,60} \times 100$ ✓M = 20,74% ✓A	1RT correct tax bracket 1SF subtracting correct values 1M subtracting rebate 1CA simplification 1M multiplying by quarter 1A answer 1O invalid (7)	F L4

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Ques	Solution	Explanation	T&L
5.2.1	NZ$: R 0,088205 : 1 ✓M $\therefore \frac{1}{0,088205}$ ✓MA = NZ$ 1: R11,337 ✓A	1M correct values 1MA dividing correct values 1A simplification (3)	F L3
5.2.2	Total cost: = 4 880 + 6 860 ✓MA = NZ$11 740 ✓A 11 740 × 11,337 ✓M = R133 096,38 ≈ R133 100 ✓R **OR** Total cost: = 4 880 + 6 860 ✓MA = NZ$11 740 ✓A 11 740 ÷ 0,088205 ✓M = R133 099,03 ≈ R133 100 ✓R	 1MA adding correct values 1A correct answer 1M multiplying by rate 1R rounding to nearest 100 **OR** 1MA adding correct values 1A correct answer 1M dividing by rate 1R rounding to nearest 100 (4)	F L2
5.2.3	✓M ✓MA 500 000 × 1,0875 = NZ$ 543 750 ✓A 543 750 × 1,0875 = NZ$ 591 328,13 ✓CA **OR** ✓MA Interest = 500 000 × 8,75% = 43 750 ✓M Balance after 1st year = 500 000 + 43 750 = 543 750 ✓A 2nd year interest = 543 750 × 8,75% = 47 578,13 Total =543750 + 47 578,13 = NZ$ 591 328,13 ✓CA	1M correct method 1MA multiplying by correct rate 1A amount after 1 year 1CA final amount after 2 years (4)	F L3
		[26]	
		TOTAL: 150	

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GRADE 12

MATHEMATICAL LITERACY P1

SEPTEMBER 2023

MARKS: 150

TIME: 3 hours

Stanmorephysics

This question paper consists of 12 pages and an addendum with 3 annexures.

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INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. Use the ANNEXURES in the ADDENDUM to answer the following questions:

   ANNEXURE A for QUESTION 3.1.
   ANNEXURE B for QUESTION 3.2.
   ANNEXURE C for QUESTION 5.1.

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.

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QUESTION 1

1.1 Mrs. T Ngomane is a Geography teacher at Walter Combined School. She received her salary advice.

SALARY ADVICE FOR MRS T NGOMANE

Surname & Initials	Organisation	Pay point
Ngomane, T	Walter Combined School	1065/23

Identity number	Job title	Appointment date
6806280198084	Teacher	1999/01/01

Tax number	Medical tax credits	Pension number	Salary notch
17238723	620,00	129873	440 628,00

Pay date	Deposit institution	Account nr	Gross salary	Deductions	Nett salary
2023/04/22	ABSA	12495324	37 619,00	13791,40	23 827,60

EARNINGS			DEDUCTIONS		
Item	Description	Amount	Item	Description	Amount
0001	Basic salary	36719,00	0001	TAX RSA	8780,74
0003	Housing allowance	900,00	0002	GEPF	2753,92
			0005	GEMS	2131,00
			0192	SACE	16,50
			0192	Union	109,24

[Adapted from Department Education Salary advice]

Use the information above to answer the questions that follow.

1.1.1 Write down Mrs. Ngomane's tax number. (2)

1.1.2 Define the term *nett salary* in the given context. (2)

1.1.3 Show how the amount of R13 791,40 was calculated. (2)

1.1.4 Mrs. Ngomane transfers 4,5% of her nett salary into a savings account. Calculate the amount she transfers every month. (2)

1.1.5 Show how the salary notch amount of R440 628,00 was calculated. (2)

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1.2 Caves are found all around the world. TABLE 1 below shows data of the TOP 10 longest known caves in the world.

TABLE 1: THE TOP 10 LONGEST CAVES IN THE WORLD.

CAVE NAME	LENGTH (in kilometres)	WHERE IS IT FOUND (City, Country)
Jewel cave	345,5	South Dakota, United States
Shuanghedong cave	311,5	Guizhou, China
Fisher ridge cave	212,1	Kentucky, United States
Lechuguilla cave	242,0	New Mexico, United States
Mammoth cave	686,6	Kentucky, United States
Sistema ox bel ha cave	318,0	Quintana Roo, Mexico
Optymistychna cave	264,5	Korolivka, Ukraine
Sistema sac actun cave	376,7	Quintana Roo, Mexico
Clearwater cave	238,0	Sarawak, Malaysia
Wind cave	260,2	South Dakota, United States

[Adapted from very interesting Junior magazine, Nov 2022, Issue #49]

Use TABLE 1 above to answer the questions that follow.

1.2.1 State whether the lengths of the caves are discrete or continuous data. (2)

1.2.2 Identify the cave in the table with the shortest length. (2)

1.2.3 Arrange, in ascending order, the lengths of the caves. (2)

1.2.4 Calculate the difference between the length of the Jewel cave and the Wind cave. (2)

1.2.5 Write down the ratio (in simplified form) of the length of the Clearwater cave to the length of the Lechuguilla cave. (2)

1.2.6 How many of these top 10 longest caves are found in the United States? (2)

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1.3 Cassandra is hosting a function at her house.
She found great specials at her local supermarket.
TABLE 2 shows the specials of all the items that she bought and their respective prices.

TABLE 2: PRICES OF ITEMS THAT WERE ON SPECIAL

ITEM	SPECIAL
Coca-Cola 4 × 1,5 litre	*SAVE R12* BUY 4 for R60
Lancewood Gouda Cheese	*SAVE R30* R99,99 for 900g
Lay's Potato Chips	*SAVE 20%* Any 2 for R35
Whole chicken	R59,99 per kg
2 ×1 litre ULTRA MEL Vanilla flavoured custard	*SAVE R18* Any 2 for R48

[Adapted from www.checkers.com]

Use TABLE 2 above to answer the questions that follow.

1.3.1 Calculate the original price of the Lancewood Gouda Cheese. (2)

1.3.2 Determine how much Cassandra paid for one 1,5 litre Coca-Cola original. (2)

1.3.3 Cassandra bought a 1,25 kg chicken.
Calculate the amount that she paid for the chicken. (2)

1.3.4 Cassandra bought four 1 litre Ultra Mel vanilla flavoured custard boxes.
Determine what she paid for them. (2)
[30]

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QUESTION 2

2.1 The Mokoena family consisting of two adults, age 45 and 48, three children aged 3, 7 and 15 and a grandmother aged 72, planned to visit the Two Oceans Aquarium in Cape Town.

The aquarium has an after 15:00 special where you get discounted prices if you enter after 15:00.

TABLE 3 below indicates the entrance fees at normal and discounted prices.

TABLE 3: THE TWO OCEANS AQUARIUM ENTRANCE FEES

TWO OCEANS AQUARIUM		
Age group	**Normal price (Enter before 15:00)**	**Discount price (Enter after 15:00)**
Adults	R220	R165
Children 14-17 years	R165	R125
Pensioners (older than 65 years)	R165	R125
Children 4-13 years	R105	R80
Children under 4 years	Free	Free

[Adapted from https://www.aquarium.co.za]

#All prices are 15% VAT inclusive.

Use TABLE 3 and the information above to answer the questions that follow.

2.1.1 Calculate the amount of VAT payable on an adult's normal price ticket. (3)

2.1.2 The family decided to visit the aquarium after 15:00 instead of before 15:00, in order to save money.

(a) Determine the amount the family would have saved, on the total cost of the tickets. (7)

(b) Determine the percentage the family would save if they visited the Aquarium after 15:00.

2.1.3 Provide a reason why pensioners often pay less than adults. (3)

(2)

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2.2 John Mokoena wants to buy a second hand Volkswagen Amarok. He found the following advertisement.

SPECIAL DEAL!!!
2021 VOLKSWAGEN
Amarok

Cash Option
Now: R641 900
(incl. 15% VAT)



2021 VOLKSWAGEN Amarok 2.0 Bitdi Highline – Instalment Option						
Months	**Interest rate**	**Vehicle price**	**Deposit**	***Residual**	**Monthly instalments**	**Total payment**
72	10%	R641 900	11%	R57 265,60	R11 900	***

*Residual is an amount that must be paid at the end of the term after all the monthly payments have been made.

[Adapted from webuycars.co.za]

Use the information above to answer the questions that follow.

2.2.1 Write down the cash price of the 2021 Volkswagen Amarok. (2)

2.2.2 Calculate the amount of deposit needed. (3)

2.2.3 Determine the total payment on the 2021 Volkswagen Amarok. (4)

2.2.4 Determine the difference between the cash option and the instalment option. (2)

2.2.5 What method of payment is the best for John to choose if he wants to pay the least amount of money after 72 months? Explain your answer. (2) **[28**

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QUESTION 3

3.1 Mica and her brother Sheldon have an application on their watches that calculates the number of steps they take every day. They post their weekly report on Instagram.

ANNEXURE A shows the weekly report for 9 December – 15 December 2022. The application differentiates between steps where you walk or climb.

Use the graph on ANNEXURE A to answer the questions that follow.

3.1.1 On which day did Mica have the third highest step count? (2)

3.1.2 Calculate **A**, the steps that Mica took on the 15th of December 2022. (3)

3.1.3 Determine **B**, the daily average steps that Sheldon took during this week. Round off your answer to the nearest whole number. (5)

3.1.4 The weekly report stated that Mica climbed 5% less than Sheldon. Calculate the number of steps Mica climbed during the week. (3)

3.1.5 Mica stated that the steps she took on the 10th and 11th of December were more than 35% of the total steps for the week. Verify, showing ALL calculations, whether her statement is valid. (5)

3.2 Instagram is a social media platform used worldwide.
Data published in the platform's self-service advertising tools shows the ten countries with the most Instagram users for 2022.

ANNEXURE B shows the following graphs:

- The data for the six countries with the most Instagram users. (Name of Country; number of users).
- The percentage (%) of Instagram users in India, for 2022, divided into age groups and male or female groups.

Use the graphs on ANNEXURE B to answer the questions that follow.

3.2.1 Write down, in words, the number of Instagram users, in Brazil, for 2022. (2)

3.2.2 Determine, as a percentage, the probability of randomly selecting an Instagram user in India in 2022, younger than 25 years. (2)

3.2.3 Calculate the percentage female Instagram users in India, in the age group 35 - 44 years. (3)

3.2.4 Determine the number of male Instagram users in India, in the age group 18 - 24 years.
Round off your answer to the nearest hundred thousand. (4)

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QUESTION 4

4.1 The most expensive private day schools in South Africa is listed below. TABLE 4 provides information on the school fees (per learner, per year) of these schools for 2022 and 2023.

TABLE 4: THE MOST EXPENSIVE PRIVATE DAY SCHOOLS IN SOUTH AFRICA FOR 2023

NAME OF SCHOOL	SCHOOL FEES			
	2022 (Rand)	2023 (Rand)	Increase (Rand)	% Increase (2022 to 2023)
Roedean School	176 204	191 181	14 977	8,5
St Mary's School	163 550	176 640	13 090	8,0
Reddam Waterfall	162 495	175 051	12 556	7,7
King David High School	**B**	174 360	-----	---
Kearsney College	209 000	224 620	15 620	7,5
St John's College	179 000	194 148	15 148	8,5
Bishops Diocesan College	170 520	185 020	14 500	8,5
Crawford College	164 470	178 000	-------	**C**
Clifton College	163 398	175 697	12 299	7,5

[Adapted from https://www.Businessinsider.co.za]

Use TABLE 4 above to answer the questions that follow.

4.1.1 Dina's two daughters are in Kearsney College and her son is in St John's College.
How much more school fees is she paying for them in 2023 than in 2022? (3)

4.1.2 Determine the median of the 2023 school fees for these schools. (2)

4.1.3 The mean total school fees for 2022 is R172 093.
Calculate **B**, the value of the school fees of King David High School. (4)

4.1.4 Determine the probability, as a percentage, of randomly selecting a school from the list whose school fees for 2023 was less than R178 000. (3)

4.1.5 Calculate value **C**, the percentage increase of Crawford College school fees from 2022 to 2023. Round your answer to one decimal.

The following formula may be used.

$$\textbf{\% Increase} = \frac{\textbf{School fees for 2023 - School fees for 2022}}{\textbf{School fees for 2022}} \times \textbf{100\%}$$

(4)

4.1.6 Determine what the school fees of St Mary's School would be for 2024, if the percentage increase is 7,5%. (3)

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4.1.7 Diego wanted to save money to enrol his son in Crawford College, Sandton. He invested R150 000 for one year and nine months in a fixed deposit account with an annually compounded interest rate of 9,55%.

(a) Define the term *interest* in the given context. (2)

(b) He stated that he would have sufficient funds, after one year and nine months, to enrol his son in Crawford College Sandton in 2023.

Verify, showing ALL calculations, whether this statement is CORRECT. (6)

4.2 Thato and her friend are planning to visit Weltevrede Lion Farm during their school holiday.
The return trip distance between Nelspruit and Heilbron is 944 km.

TABLE 5 shows the rates for Alama car rental and Enterprise car rental.

TABLE 5: FEES FOR CAR RENTAL COMPANIES

	ALAMA CAR RENTAL 	**ENTERPRISE CAR RENTAL** 
BOOKING DEPOSIT	R2 000	None
FREE KILOMETRES	200 km	None
TARIFF	R5,06 per km	R6,15 per km

[Adapted from www.Hertz.co.za]

Use TABLE 5 and the information above to answer the questions that follow.

4.2.1 The formula below is used to calculate the cost of Enterprise car rental.

Cost (R) = 6,15 × d, where d = number of kilometres travelled

Provide the formula to calculate the cost of Alama car rental. (3)

4.2.2 Thato decided to use Enterprise car rental.
Verify, showing ALL calculations, whether her choice is the most economical. (5)

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QUESTION 5

5.1 Soccer is being played worldwide and fans are following their favourite soccer players on Instagram.
TABLE 6 on ANNEXURE C shows the top 10 highest paid soccer players, for 2022, in the world.

Use TABLE 6 on ANNEXURE C to answer the questions that follow.

5.1.1 Write down the name of the team for which the youngest player on the list is playing. (2)

5.1.2 Determine the probability, as a decimal, of randomly selecting a soccer player from the top 10 list who is older than 30 years. (3)

5.1.3 Calculate the inter-quartile range for the Instagram followers of the soccer players.
Round off your answer to the nearest million.

You may use the following formula:

Inter-quartile range = Quartile 3 – Quartile 1 (6)

5.1.4 Determine (in South African rand) Neymar Jr's ON FIELD salary for 2022.

TABLE 7 shows the exchange rate for five countries on 24 May 2023.

TABLE 7: EXCHANGE RATE FOR FIVE COUNTRIES ON 24 MAY 2023

CURRENCY	UNITS PER ZAR	ZAR PER UNITS
British pound	0,042007	23,805798
Canadian dollar	0,070602	14,163902
Euro	0,048304	20,702018
US dollar	0,051947	19,250546
Japanese Yen	7,240478	0,138112

[Adapted from https://www.x-rates.com] (3)

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5.2 Jimmy is a 66-year-old entrepreneur, earns an annual taxable income of R627 010. Jimmy's spouse is on his medical aid.

TABLE 8 indicates the tax tables for the 2022/2023 tax year.

TABLE 8: TAX RATES FOR THE 2022/2023

TAXABLE INCOME (R)	RATES OF TAX (R)
1 – 226 000	18% of taxable income
226 001 – 353 100	40 680 + 26% of taxable income above 226 000
353 101 – 488 700	73 726 + 31% of taxable income above 353 100
488 701 – 641 400	115 762 + 36% of taxable income above 488 700
641 401 – 817 600	170 734 + 39% of taxable income above 641 400
817 601 – 1 731 600	239 452 + 41% of taxable income above 817 600
1 731 601 and above	614 192 + 45% of taxable income above 1 731 600

ANNUAL TAX REBATES

AGE	AMOUNT (R)
Primary	16 425
Secondary (65 years and older)	9 000
Tertiary (75 years and older)	2 997

MEDICAL AID TAX CREDITS

CRITERIA	AMOUNT PER MONTH (R)
For the taxpayer	347
For the taxpayer and one dependant	694
For each additional dependant	234

[Adapted from www.sars.gov.za/tax-rates]

Use TABLE 8 and the information above to answer the questions that follow.

5.2.1 Define the term *annual tax rebates* in the given context. (2)

5.2.2 Verify, showing ALL calculations, that Jimmy's tax that he pays per month is more than R11 000. (8)

5.2.3 Explain why citizens who are 75 years and older pay less tax than citizens younger than 75 years, even though they earn the same taxable income. (2)

5.2.4 Jimmy's annual gross salary of R677 848,65 increased by 5,8% in 2022. Calculate his gross salary in 2021, before the increase. (2)

[28]

TOTAL: 150

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NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

ADDENDUM

SEPTEMBER 2023

Stanmorephysics

This addendum consists of 4 pages and 3 annexures.

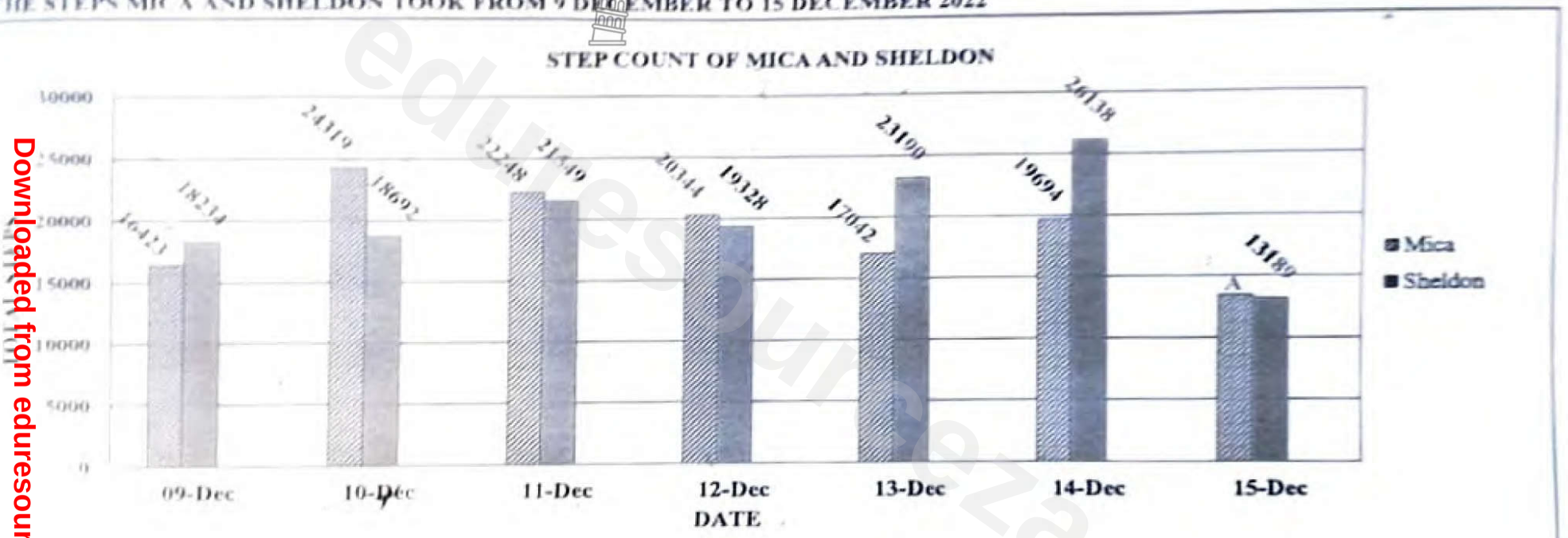
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ANNEXURE A

QUESTION 3.1

THE STEPS MICA AND SHELDON TOOK FROM 9 DECEMBER TO 15 DECEMBER 2022



	MICA	SHELDON
Total steps for the week	133 514	---
Daily average	19 073	B
% Walking	---	91%
% Climbing	---	9%

[Adapted from HUAWAI health app]

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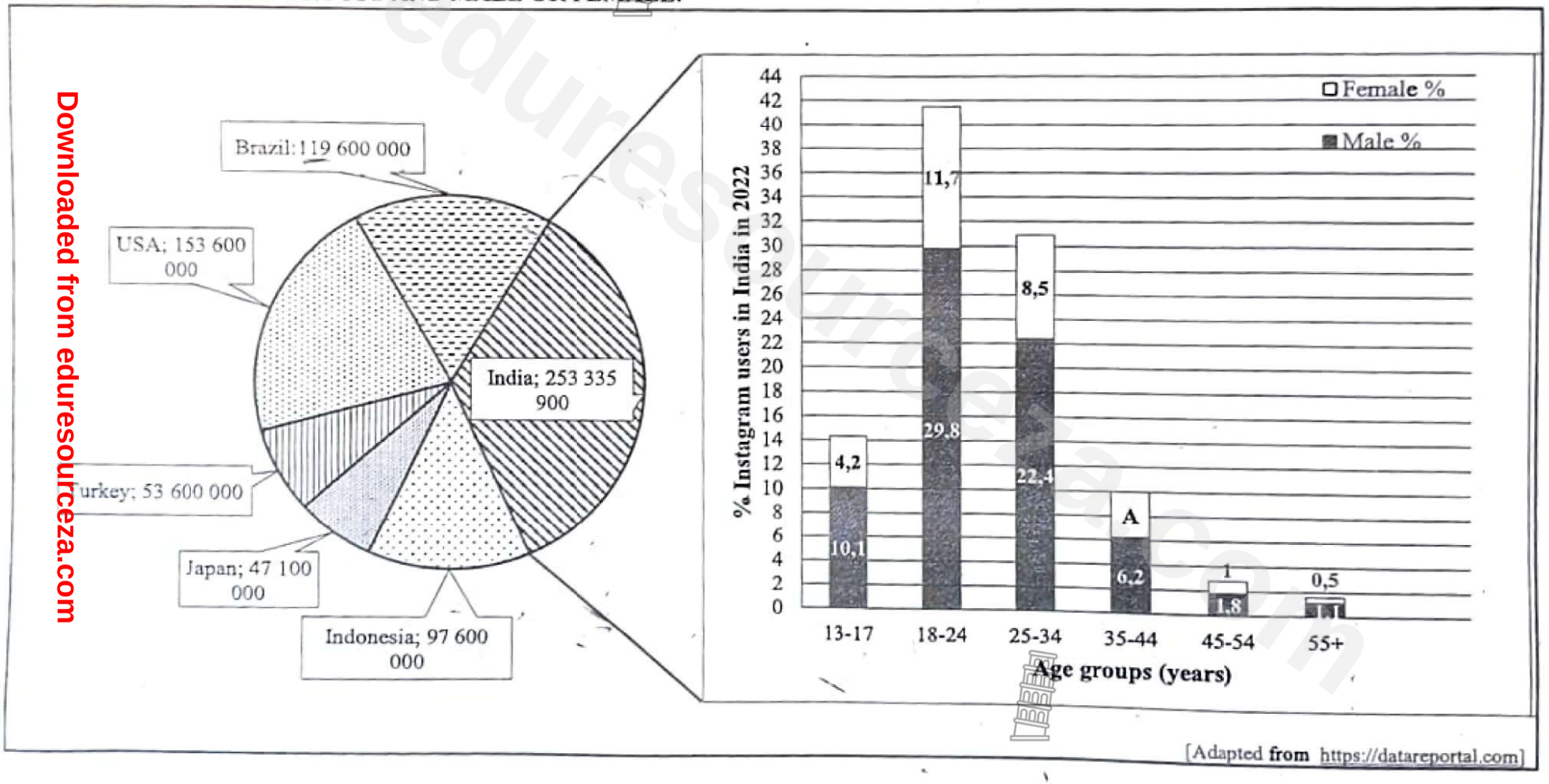
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ANNEXURE B

QUESTION 3.2

COUNTRIES WORLDWIDE WITH THE MOST INSTAGRAM USERS IN 2022 AND THE % INSTAGRAM USERS IN INDIA FOR 2022, ACCORDING TO AGE GROUPS AND MALE OR FEMALE.



[Adapted from https://datareportal.com]

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ANNEXURE C

QUESTION 5.1

TABLE 6: TOP 10 HIGHEST PAID SOCCER PLAYERS IN THE WORLD FOR 2022

NAME	TEAM	NATIONALITY	AGE	INSTAGRAM FOLLOWERS (in 100 000)	SALARY (in million US $)		
					ON FIELD	OFF FIELD	TOTAL
Kylian Mbappé	Paris Saint-Germain	France	23	727	110	18	128
Lionel Messi	Paris Saint-Germain	Argentina	35	3 640	65	55	120
Cristiano Ronaldo	Manchester United	Portugal	37	4 860	40	60	100
Neymar Jr.	Paris Saint-Germain	Brazil	30	1 790	55	32	87
Mohamed Salah	Liverpool	Egypt	30	530	35	18	53
Erling Haaland	Manchester City	Norway	22	193	35	4	39
Robert Lewandowski	Barcelona	Poland	34	302	27	8	35
Eden Hazard	Real Madrid	Belgium	31	271	27	4	31
Andrés Iniesta	Vissel Kobe	Spain	38	402	25	5	30
Kevin de Bruyne	Manchester City	Belgium	31	191	25	4	29

[Adapted from www.forbes.com]

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GRADE / *GRAAD* 12

MATHEMATICAL LITERACY P1 /
WISKUNDIGE GELETTERDHEID V1
SEPTEMBER 2023
MARKING GUIDELINES / *NASIENRIGLYNE*

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 /RG /RM	Reading from the table/graph/map/diagram/document *Lees vanaf tabel/grafiek/kaart/diagram/dokument*
SF	Correct substitution in a formula/*Korrekte vervanging in 'n formule*
O	Opinion/Explanation/*Opinie/Verduideliking*
P	Penalty e.g. for no units, incorrect rounding off, etc *Penalisasie, bv. Vir geen eenhede, verkeerde afronding, ens.*
R	Rounding off/*Afronding*
NPR	No penalty for rounding/*Geen penalisasie vir afronding nie*
AO	Answer only/*Slegs antwoord*
MCA	Method with constant accuracy/*Metode met volgehoue akkuraatheid*

These marking guidelines consist of 13 pages.

Hierdie nasienriglyne bestaan uit 13 bladsye.

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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.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- Rounding is an independent mark.
- General principle of marking, if the candidate makes one mistake he loses one mark.
- A conclusion mark can only be given if relevant calculations precedes it.

LET WEL:
- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas; dit hou egter op by die tweede berekeningsfout.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *Afronding tel as 'n afsonderlike punt.*
- *Die algemene beginsel van merk as 'n leerder een fout maak verloor hy een punt.*
- *'n Gevolgtrekkingspunt kan slegs gegee word indien relevante berekeninge dit voorgaan.*

QUESTION/*VRAAG* 1 [30 MARKS/*PUNTE*]		**ANSWER ONLY FULL MARKS**	
Q/V	**Solution/Oplossing**	**Explanation/Verduideliking**	**T/L**
1.1.1	17238723 ✓✓RT	2RT correct month (2)	F L1 E
1.1.2	Total income that Mrs T Ngomane received per month after all the deduction were made. / *Totale inkomste wat mev T Ngomane per maand ontvang het nadat al die aftrekkings gemaak is.* ✓✓A	2A correct definition (2)	F L1 E
1.1.3	Total deduction / *Totale aftrekkings* ✓RT = R8 780,74 + R2 753,92 + R2 131,00 +R16,50 + R109, 24 ✓M = R13 791,40	1RT correct values 1M adding (2)	F L1 E
1.1.4	$\frac{4,5}{100}$ × R23 827,60 ✓MA = R1 072,24 ✓A	1MA multiplying by 4,5% 1A simplification (2)	F L1 E
1.1.5	Total notch amount / *Totale salariskerfbedrag* ✓RT = R36 719 × 12 ✓MA = R440 628	1RT correct value 1MA multiplying by 12 (2)	F L1 E

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
1.2.1	Continuous / *Kontinue* ✓✓A	2A correct classification (2)	D L1 E
1.2.2	Fisher ridge cave / *Fisher ridge grot* ✓✓RT	2RT correct cave (2)	D L1 E
1.2.3	Ascending order / *Stygende volgorde* ✓RT 212,1; 238,0; 242,0; 260,2; 264,5; 311,5; 318,0; 345,5; 376,7; 686,6 ✓A	1RT correct values 1MA ascending order (2)	D L1 E
1.2.4	Difference / *Verskil* = 345,5 – 260,2 ✓MA = 85,3 km ✓A	1MA subtracting correct values 1A simplification (2)	D L1 E
1.2.5	238,0 : 242,0 ✓RT 119 : 121 ✓CA	1RT correct values in correct order 1CA simplification (2)	D L1 M
1.2.6	5 ✓✓A	2A correct number (2)	D L1 E
1.3.1	Original Price / *Oorspronklike prys* = R99,99 + R30 ✓MA = R129,99 ✓A	1MA adding correct values 1A simplification (2)	F L1 E
1.3.2	Unit price / *Eenheidsprys* = R60 ÷ 4 ✓MA = R15 ✓A	1MA dividing R60 by 4 1A simplification (2)	F L1 E

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
1.3.3	Price of one chicken / *Prys van een hoender* = 1,25 kg × R59,99 ✓MA = R74,99 / R75,00 ✓A	 1MA multiplying with 1,25 kg 1A simplification **NPR** (2)	F L1 E
1.3.4	Price of custard / *Prys van vla* = R48 × 2 ✓MA = R96 ✓A	 1MA multiplying R48 by 2 1A simplification (2)	F L1 E
		[30]	

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QUESTION / VRAAG 2 [28 MARKS / PUNTE]			
Q/V	**Solution/Oplossing**	**Explanation/Verduideliking**	**T/L**
2.1.1	$\frac{R220}{1,15}$ ✓MA = R191,30 ✓CA VAT / *BTW* = R220 – R191,30 = R28,70 ✓CA **OR** ✓RT R220 × $\frac{15}{115}$ ✓M = R28,70 ✓CA **OR** VAT / *BTW* = R220 – 220 × $\frac{100}{115}$ ✓MA = R220 – R191,30 ✓CA = R28,70 ✓CA	1MA divide correct value by 1,15 1CA calculating price excl. VAT 1CA total VAT **OR** 1RT correct value 1M multiply by $\frac{15}{115}$ 1CA total VAT **OR** 1MA multiply correct value by $\frac{100}{115}$ 1CA calculating price excl. VAT 1CA total VAT (3)	F L2 M
2.1.2a	Before / *Voor* 15:00: ✓MA ✓RT 2×R220 = R440 2×R165 = R330 1×R105 = R105 Total = R875 ✓CA After / *Na* 15:00: ✓RT 2 × *R*165 = *R*330 2 × *R*125 = *R*250 1 × *R*80 = *R* 80 Total/*Totaal* = R660 ✓CA ✓MCA Discount amount/*Afslag bedrag* = R875 – R660 = R215 ✓CA	1MA all three correct values 1RT three correct tariffs 1CA correct total 1RT three correct tariffs 1CA correct total 1MCA subtracting values 1CA simplification (7)	F L3 D

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
2.1.2b	✓CA % Saving / %Besparing $= \frac{R215}{R875} \times 100$ ✓M $= 24{,}6\%$ ✓CA	1CA correct fraction 1M multiplying by 100 1CA correct % saving (3)	F L2 M
2.1.3	Pensioners often live on grants/pension only; thus lower rates allow them to afford more things in life. / *Pensioenarisse leef dikwels slegs van toelaes/pensioen; laer tariewe laat dus toe dat hulle meer dinge in die lewe kan bekostig.* ✓✓O	2O Reason (2)	F L4 M
2.2.1	R641 900 ✓✓RT	2RT cash price (2)	F L1 E
2.2.2	$\frac{11}{100}$ ✓A $\times$R641 900 ✓M = R70 609 ✓CA	1A correct percentage 1M multiplying by cash price 1CA deposit (3)	F L1 E
2.2.3	✓MCA ✓MA Total = R70 609 + (R11 900 ×72) + R57 265,60 ✓M = R70 609 + R856 800 + R57 265,60 = R984 674,60 ✓CA	**CA from Question 2.2.2** 1MCA adding deposit 1MA multiplying 11900 by 72 1M adding residual 1CA simplification (4)	F L3 M
2.2.4	Difference / *Verskil* = R984 674,60 – R641 900 ✓MA = R342 774,60 ✓CA	**CA from Question 2.2.3** 1MA subtracting cash price 1A difference (2)	F L2 E
2.2.5	✓A Cash payment / *Kontant betaling* • No interest will be paid. / *Geen rente word betaal* ✓O **OR / *OF*** • No residual payment will be paid. / *Geen res-waarde word betaal nie.*	1A correct payment option 1O correct reason (2)	F L4 M
		[28]	

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QUESTION / *VRAAG* 3 [29 MARKS]	**Only penalize once for omitting thousands**		
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
3.1.1	12/12 OR 12 December ✓✓RT	2RT correct day (2)	D L1 E
3.1.2	**A** = 133 514 – (16 423 + 24 319 + 22 248 + 20 344 + 17 042 + 19 694) ✓RT = 133 514 – 120 070 ✓M = 13 444 ✓CA **OR** **A** = 133 514 – 16 423 - 24 319 - 22 248 - 20 344 - 17042 - 19 694 ✓RT ✓M = 13 444 ✓CA	1RT correct values 1M subtracting correct values 1CA correct value **OR** 1RT correct values 1M subtracting correct values 1CA correct value (3)	D L1 M
3.1.3	Total steps / *Totale treë* = 18234+18692+21549+19328+23190+26138+13189 ✓MA = 140 320 ✓CA Daily average / *Daaglikse gemiddeld* $= \frac{140\,320}{7}$ ✓MCA = 20 045,7 ✓CA ≈ 20 046 ✓R	1MA adding correct values 1CA total steps 1MCA dividing total by 7 1CA correct average 1R correct rounding (5)	D L3 M
3.1.4	9% - 5% = 4% ✓MA $\frac{4}{100} \times 133\,514$ ✓MA = 5 340,56 ✓CA	1MA calculating 4% 1MA multiplying correct value 1CA total steps (3)	D L2 E
3.1.5	24 319 + 22 248 ✓MA = 46 567 ✓CA $\frac{46\,567}{133\,514} \times 100$ ✓M = 34,88% ✓CA No, her statement is not valid.✓O *Nee, haar stelling is nie geldig nie.*	1MA adding correct values 1CA correct total 1M concept of percentage 1CA correct % 1O verification (5)	D L4 D

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
3.2.1	One hundred and nineteen million six hundred ✓✓A thousand / Een h*onderd en negentien miljoen seshonderd duisend.*	2A correct words (2)	D L1 M
3.2.2	10,1% + 4,2% + 29,8% + 11,7% ✓M = 55,8% ✓CA	1M adding correct values 1CA correct percentage (2)	P L2 E
3.2.3	10% - 6,2% ✓M ✓RT = 3,8% ✓CA	1M subtracting 1RT correct values 1CA correct percentage (3)	D L2 E
3.2.4	$\frac{29,8}{100}$ ✓RT ×253 335 900 ✓MA = 75 494 098,2 ✓CA ≈ 75 500 000 ✓R	1RT correct percentage 1MA multiply with correct value 1CA correct number 1R correct rounding (4)	D L2 M
		[29]	

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QUESTION / *VRAAG* 4 [35 MARKS]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T/L**
4.1.1	✓RT 2 (15 620) + 15 148 ✓M = R46 388 ✓CA	1RT multiply correct fee by 2 1M adding correct fee 1CA correct total (3)	F L2 M
4.1.2	174 360; 175 051; 175 697; 176 640; **178 000**; 185020; 191 181; 194 148; 224 620 ✓M Median / *Mediaan* = 178 000 ✓A	1M arranging values in order 1A finding median (2)	D L2 E
4.1.3	Mean / *Gemiddeld* $= \frac{1\,388\,637+A}{9}$ ✓MA R172 093 $= \frac{1\,388\,637+B}{9}$ ✓MA (R172 093 × 9) – R1 388 637 = B ✓S **B** = R160 200 ✓CA	1MA adding correct values to R1 388 637 1MA concept of mean 1S multiply by 9 and subtract correct value 1CA mean (4)	D L3 M
4.1.4	$\frac{4}{9}$ ✓A ×100 ✓A = 44,44% ✓CA	1A numerator 1A denominator 1CA correct percentage (3)	P L2 E
4.1.5	% increase / *verhoging* $= \frac{178\,000-164\,470}{164\,470}$ ✓SF ✓A ×100% = 8,2264 ✓CA ≈ 8,2 ✓R	1SF correct substitution 1A denominator 1CA correct increase 1R correct rounding (4)	F L2 M
4.1.6	$\frac{7,5}{100}$ ×R176 640 ✓MA = R13 248 ∴R176 640+R13 248 ✓M = R189 888 ✓CA **OR** $\frac{107,5}{100}$ ✓MA ×R176 640 ✓RT = R189 888 ✓CA	1MA multiplying correct value by 7,5% 1M adding values 1CA correct fee **OR** 1MA multiplying 107,5% 1RT correct value 1CA correct fee (3)	F L2 M

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.1.7a	Money that Diego earned on an investment over a certain period of time at a certain rate. / *Geld wat Diego op 'n belegging oor 'n sekere tydperk teen 'n sekere koers verdien het.* ✓✓A	2A definition (2)	F L1 E
4.1.7b	1st year / *jaar*: $\frac{9,55}{100} \times$R150 000 ✓MA = R14 325 ✓A Total after 1 year / *Totaal na 1 jaar*: R150 000 + R14 325 = R164 325 ✓CA 9 months / *maande*: R164 325$\times \frac{9,55}{100} \times \frac{9}{12}$ ✓MA = R11 769,78 Total after 1 year, 9 months / *Totaal na 1jaar 9 maande*: R164 325 + R11 769,78 = R176 094,78 ✓CA Crawford College 2023 = R178 000 No, statement incorrect / *Nee, stelling nie korrek* ✓O **OR** 1st year / *jaar*: 1,0955×R150 000 ✓A ✓MA = R164 325 ✓A Interest rate for 9 months/ *Rentekoers vir 9 maande*: 9,55% ×9÷12 = 7,1625% ✓A 1,071625×R164 325 = R176 094,78 ✓CA Crawford College 2023 = R178 000 No, statement incorrect / *Nee, stelling nie korrek* ✓O	1MA calculating 9,55% 1A interest 1 year 1CA first year 1MA calculating 9 months 1CA total 1O verification **OR** 1A calculating 1,0955 1MA multiplying 1,0955 1A first year 1A calculating 7,1625% 1CA total 2nd year 1O verification (6)	F L4 M

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
4.2.1	✓A ✓A ✓A Cost / *Koste* = R2 000 + R5,06(d – 200km); where d = distance / *waar d = afstand*	1A fixed cost 1A rate per km 1A difference in km (3)	F L2 M
4.2.2	✓SF Alama cost / *koste* = R2 000 + R5,06 (944 – 200) = R5 764,64 ✓CA Enterprise cost / *koste* = R6,15 × 944 ✓SF = R5 805,60 ✓CA No, Alama is more cost effective / *Nee, Alama is die mees ekonomieste* ✓O	1SF substitution 1CA alama car cost 1SF substitution 1CA enterprise cost 1O verification (5)	F L4 D
		[35]	

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QUESTION / *VRAAG* 5 [28 MARKS]			
Q/V	**Solution/Oplossing**	**Explanation/Verduideliking**	**T/L**
5.1.1	Manchester City ✓✓RT	2RT correct team (2)	D L1 E
5.1.2	$\frac{6}{10}$ ✓A ✓A = 0,6 ✓CA	1A correct numerator 1A correct denominator 1CA decimal (3)	P L2 E
5.1.3	✓M 19 100 000; 19 300 000; **27 100 000**; 30 200 000; 40 200 000; 53 000 000; 72 700 000; **179 000 000**; 364 000 000; 486 000 000 Q1 = 27 100 000 ✓A Q3 = 179 000 000 ✓A IQR / *IKO* = Q3 – Q1 = 179 000 000 – 27 100 000 ✓SF = 151 900 000 ✓CA = 152 000 000 ✓R	1M arranging values in order 1A finding Q1 1A finding Q3 1SF substituting into formula 1CA correct IQR 1R correct rounding **[omitting millions max 5]** (6)	D L3 M
5.1.4	0,051947 US $ = R1 ✓RT 55 000 000 $ = $\frac{55\,000\,000 \times 1}{0{,}051947}$ ✓MA = R1 058 771 440,12 ✓A **OR** 1 US $ = R19,250546 ✓RT 55 000 000 $ = $\frac{55\,000\,000 \times 19{,}250546}{1}$ ✓MA = R1 058 780 030 ✓A	1RT correct salary 1MA exchange rate concept 1A correct amount **OR** 1RT correct salary 1MA exchange rate concept 1A correct amount **[omitting millions max 1]** (3)	F L3 D
5.2.1	An amount of money that taxpayers can subtract directly from the taxes they owe, according to their age. / ✓✓A *'n Bedrag geld wat belastingbetalers direk kan aftrek van die belasting wat hulle skuld, volgens hul ouderdom.*	2A correct definition (2)	F L1 E

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T/L
5.2.2	Annual tax / *Jaarlikse belasting* ✓A = R115 762 + $\frac{36}{100}$(R627 010 – R488 700) ✓SF = R115 762 + $\frac{36}{100}$(R138 130) = R115 762 + R49 791,6 = R165 553,60 ✓CA ✓MA Rebate / *Korting* = R165 553,60 – (16 425 + 9 000) = R140 128,60 ✓CA Medical credits / *Mediese krediete*: R140 128,60 – 12 (R694) ✓MA = R131 800,60 Per month / *Per maand* = $\frac{R131\ 800,60}{12}$ = R10 983,38 ✓CA Statement not valid / *Bewering is nie geldig* ✓O	1A correct tax bracket 1SF correct values in formula 1CA correct value 1MA subtract rebate values 1CA simplification 1MA subtract medical credit 1CA monthly tax 1O verification (8)	F L4 D
5.2.3	They receive 3 rebates. / *Hul kwalifiseer vir 3 kortings.* ✓✓O **OR** Their total rebate is higher. / *Hul totale kortings is hoër.* ✓✓O	2O opinion (2)	F L4 M
5.2.4	Gross annual salary 2021/*Bruto jaarlikse salaris 2021* = $\frac{R677\ 848,65}{1,058}$ ✓MA = R640 688,71 ✓CA **OR** Gross annual salary / *Bruto jaarlikse salaris* = $\frac{R677\ 848,65}{105,8/100}$ ✓MA = R640 688,71 ✓CA	1MA divide by 1,058 1CA correct salary **OR** 1MA divide by 105,8% 1CA correct salary (2)	F L2 D
		[28]	
		TOTAL/TOTAAL: 150	

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