education

MPUMALANGA PROVINCE

REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

SEPTEMBER 2024

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages, 1 answer sheet and an addendum with 2 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.

   ANSWER SHEET 1 for QUESTION 2.1.3
   ANNEXURE A for QUESTION 4.2
   ANNEXURE B 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.

QUESTION 1

1.1 TABLE 1 below shows the Trans African Concessions toll tariff adjustments on the N4 Toll route for the Maputo corridor which came into effect on 1 March 2023.

TABLE 1: TRANS AFRICAN CONCESSION TOLL TARIFF ADJUSTMENTS ON THE N4 TOLL ROUTE FOR THE MAPUTO CORRIDOR

ROUTE	PLAZA	CLASS1	CLASS 2	CLASS 3	CLASS 4
N4 TOLL ROUTE	Donkerhoek Ramp	R15,00	R21,00	R31,00	R59,00
	Cullinan Ramp	R19,00	R31,00	R46,00	R76,00
	Diamond Hill Mainline	R45,00	R63,00	R118,00	R195,00
	Valtaki Ramp	R35,00	R49,00	R72,00	R162,00
	Ekandustria Ramp	R28,00	R42,00	R58,00	R116,00
	Middelburg Mainline	R75,00	R162,00	R246,00	R323,00
	Machado Mainline	R112,00	R310,00	R452,00	R646,00
	Nkomazi Mainline	R84,00	R172,00	R249,00	R359,00

[www.tracn4.co.za]

Use TABLE 1 above to answer the questions that follow.

1.1.1 What is the name of the company that published the above tariffs? (2)

1.1.2 State whether the tariffs for the different classes in TABLE 1 are discrete or continuous. (2)

1.1.3 Identify the plaza and its class that charges R58,00. (2)

1.1.4 Arrange, in descending order, the tariffs for class 3. (2)

1.1.5 The amount payable for the Middelburg Mainline (class 4) is R323,00. Round off the tariff to the nearest 1000. (2)

1.1.6 Write down the modal tariff from class 1 to class 4. (2)

1.1.7 Determine the difference between the tariffs of Cullinan Ramp and Machado Mainline in class 3. (3)

1.1.8 The probability of paying a tariff less than R60,00 in class 3 is 0,375. Write down this probability as a fraction in its simplest form. (3)

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1.2 Jacob bought three stoves from Game stores for himself, his mother and mother-in-law to mitigate the effects of load shedding.

Below is a receipt received from Game stores.

A RECEIPT FROM GAME STORES

Messtores (Pty) Ltd trading as game 01/05/2023 02:08pm
Game Nelspruit Ilanga Mall
SHOP 7 ILANGA MALL
N4 Silver Parks Oaks Flamboyant STREET

RECEIPT

Description	Quantity	Unit Cost	Discount on Unit Cost	Cost Price
Hisense 90cm Standalone Gas Stove	2	R12 499,00	R625,00	R23 748,00
Univa 4 Burner Gas Stove with Gas Oven	1	R5 999,00	R1 000,00	R4 999,00
Total for the 3 items				R28 747,00

Note: All prices are inclusive of VAT @ 15%

[Adapted from a Gamestoresreceipt]

Use the information above to answer the questions that follow.

1.2.1 In which month was this purchase done? (2)

1.2.2 Write the acronym VAT in full. (2)

1.2.3 Identify the Game store where this purchase was made. (2)

1.2.4 Determine the unit cost of a Hisense 90cm Standalone Gas Stove after the discount. (2)

1.2.5 Show how the total cost of R28 747,00 was calculated. (2)
[28]

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2.1.4 Use the tables or graphs on ANSWER SHEET 1 to answer the questions that follow.

(a) Explain the meaning of the word *break-even* in the context of the question. (2)

(b) If the selling price is increased, write down, with a reason whether the break-even point will be lower or higher. (3)

2.2 Mr Ndlovu who owns a 2022 VW Amarok with a current value of R462 520,00. He travels 1 650km on average per month.

He claims every month for using his vehicle. His monthly travel allowance consists of a predetermined amount for the value of the vehicle as well as fuel maintenance costs.

Below is TABLE 4 indicating how to claim.

TABLE 4: THE CURRENT VALUE OF VEHICLE AND FIXED TRAVEL, FUEL AND MAINTENANCE CLAIMS

Current value of vehicle	Claim		
	Fixed travelling (R/annum)	Fuel (c/km)	Maintenance (c/km)
≤ to R95 000	29 836	131,7	40,9
> R95 000 and ≤ R190 000	52 889	147.0	51,1
> R190 000 ≤ R285 000	76 033	159,7	56,3
> R285 000 ≤ R380 000	96 197	171,8	61,5
> R380 000 ≤ R475 000	116 438	183,8	72,3
> R475 000 ≤ R570 000	137 735	210,8	88,6
> R570 000 ≤ R665 000	159 031	218,0	105,5
> R665 000	159 031	218,0	105,5

[Adapted from www.acino-pharma.com]

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

2.2.1 Show that Mr Ndlovu's quarterly fixed travelling claim is R29 109,50. (2)

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2.2.2 Mr Ndlovu likes the newly released 2023 VW Amarok which costs R1 050 000,00.

Calculate, in rands, the maintenance claim if he decides to buy the vehicle. (4)

2.2.3 Mr Ndlovu decides not to buy the newer vehicle. He states that he could claim back R10 446,62 after tax is deducted for his monthly travelling 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 + maintenance claim) (9)

2.3 Eskom has announced that over 12 months of the 2024 financial year, commencing 01 July 2024, a 18,65% increase will be applicable to all standard domestic tariff customers.

A standard domestic tariff charge for home light 2 is R2, 63969 VAT inclusive.

2.3.1 Calculate the new tarrif amount without VAT, rounded to the nearest ten, for a domestic tariff charge for home light 2 of R2, 63969. (7)

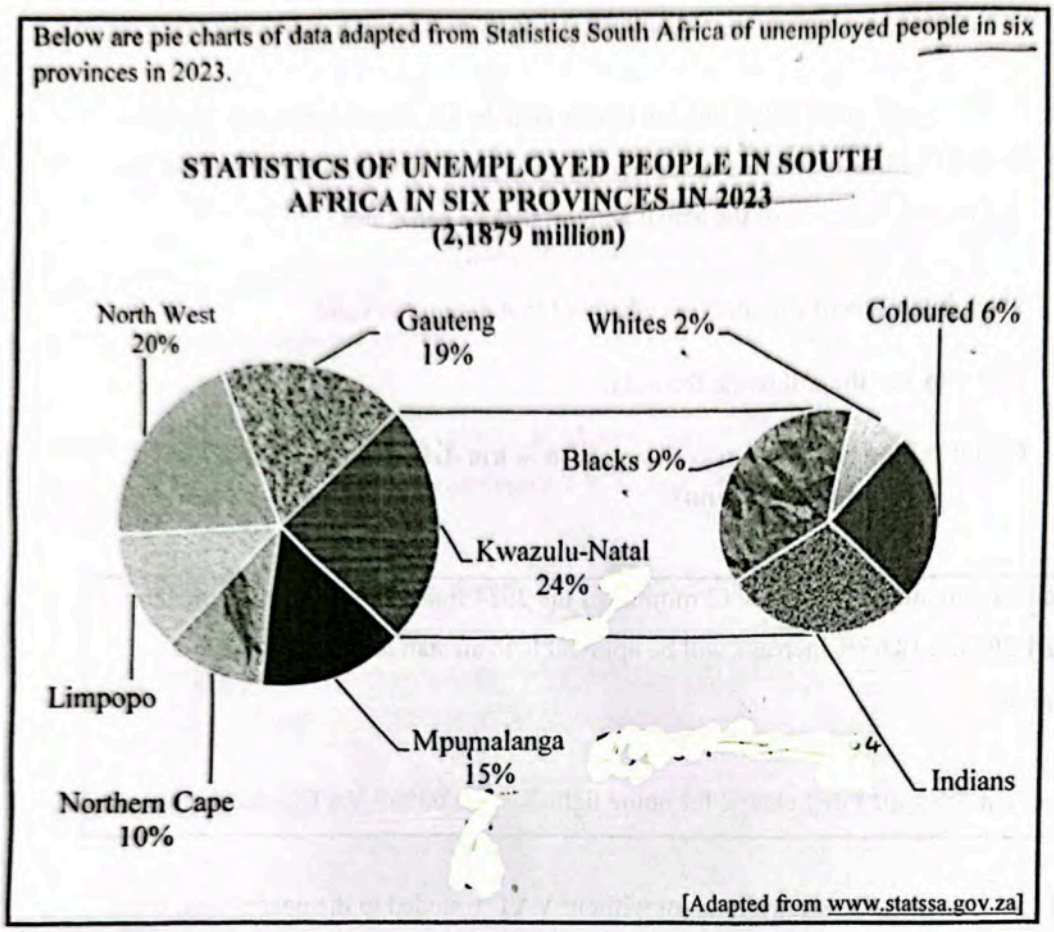
2.3.2 Electricity has been expensive over the years given the recent tariff hikes by Eskom.

Give one way of saving electricity at home to save money. (2)

[41]

QUESTION 3

3.1 Below are pie charts of data adapted from Statistics South Africa of unemployed people in six provinces in 2023.



Use the pie charts above to answer the questions that follow.

3.1.1 What is a possible data collection method that was used to collect the above data? (2)

3.1.2 Write down 2,1879 million in thousands. (2)

3.1.3 Determine the percentage allocated for Limpopo in 2023. (3)

3.1.4 Calculate the percentage allocated for the Indian population in 2023. (3)

3.1.5 The population of blacks in Kwazulu-Natal is 169 911.

Verify, showing ALL calculation, whether this statement is correct. (4)

3.1.6 State another type of graph that could be used to represent the data above. (2)

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3.1.7 Determine, rounded to one decimal, the probability of randomly selecting a population group in Kwazulu-Natal category that is not Indian. (5)

[21]

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QUESTION 4

4.1 The number of entries of selected subjects registered with the department of basic education in 2020 and 2021 are listed below. TABLE 5 provides information on the number of candidates who registered in 2020 and 2021. Some values are omitted.

TABLE 5: THE NUMBER OF ENTRIES REGISTERED IN 2020 AND 2021

NAME OF SUBJECT	NUMBER ENTERED			
	2020	2021	Increase	% Increase (2020 to 2021)
Accounting	92 767	105 894	13 127	14,15
Agricultural Sciences	96 155	123 990	27 835	28,95
Business Studies	207 045	243 843	36 798	17,77
Geography	……	P	71 026	……
History	173 498	227 448	53 950	31,10
Life Sciences	319 228	384 216	64 988	20,36
Mathematical Literacy	341 363	441 067	99 431	29,13
Mathematics	Q	259 143	25 882	11,07
Physical Sciences	174 310	196 968	22 658	13,00

[Adapted from www.dashboard.gov.za]

Use TABLE 5 above to answer the questions that follow.

4.1.1 Write down, in words without using numerals, the number of History candidates who enrolled in 2021. (2)

4.1.2 Calculate the value of **Q**, the number of entries of Mathematics in 2020. (4)

4.1.3 The mean total number of entries for 2021 is 260 136.

Calculate **P**, the value of the number of entries for Geography. (4)

4.1.4 The probability, as a decimal, of randomly selecting a subject whose increased number of entries was greater than 30 000 is 0,56.

Show with calculations whether you agree or disagree with the statement above. (3)

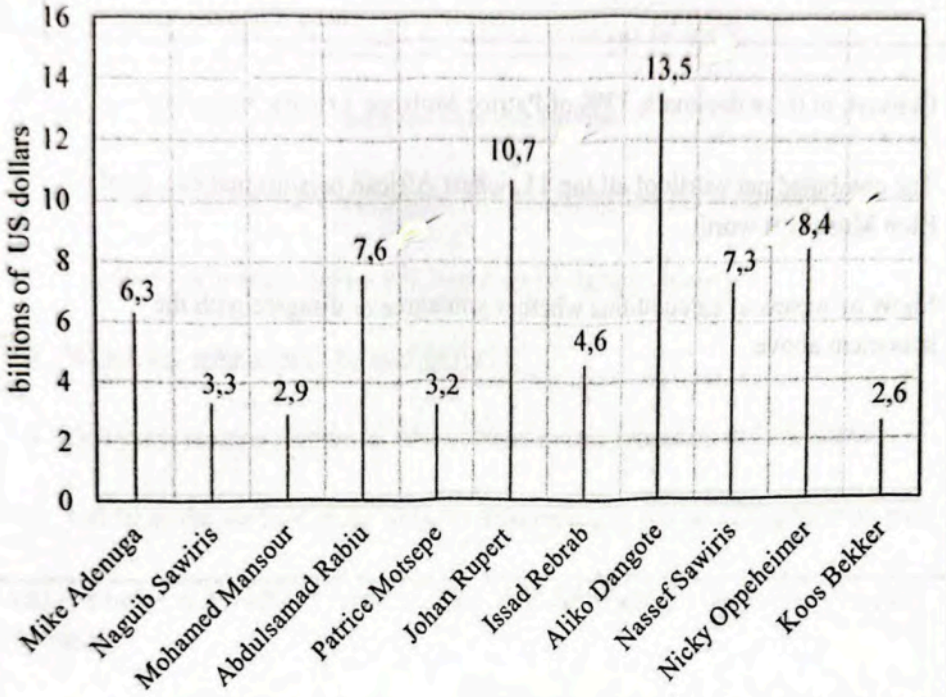
4.1.5 101 schools in Mpumalanga are Mathematics, Sciences, Technology Academies (MSTA). The department of basic education projected that the number of entries for Physical Sciences in 2022 would be more than 215 000 if it increased by 10% from 2021.

Verify, showing ALL calculations, whether the statement is CORRECT. (5)

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4.2 The graph below shows the top eleven richest persons in Africa.

ANNEXURE A shows a bar graph of top ten richest persons in the world.



[Source: www.forbes.com]

Use the graph above and ANNEXURE A to answer the questions that follow.

4.2.1 Write down the names of billionaires in Africa whose net worth is between 7,4 billion US dollars and 9 billion US dollars. (2)

4.2.2 Identify the name and amount of the fourth richest persons in the world. (3)

4.2.3 TABLE 6 below shows the exchange rate for two countries on 23 December 2023.

TABLE 6: EXCHANGE RATE FOR TWO CURRENCIES

CURRENCY	ZAR PER UNIT	UNITS PER ZAR
Euro	20,6011	0,048541
US dollar	18,6035	0,537533

www.standardbank.co.za/forex

Convert, to three decimals, 13% of Patrice Motsepe`s riches into Euros. (7)

4.2.4 The combined net worth of all top 11 richest African persons makes a third of Elon Musk` net worth.

Show by means of calculations whether you agree or disagree with the statement above. (7)

[38]

QUESTION 5

5.1 Ben works as a superintendent at a regional hospital. He was 27 years when he started working in January 1985 as a nurse and became a superintendent in December 2023. He has a wife and three children under his medical aid.

TABLE 7 on ANNEXURE B shows the SARS income tax tables for 2023/2024.

Use ANNEXURE B to answer the questions that follow.

5.1.1 Ben earned a daily taxable income of R701,37 before her promotion.

In which tax bracket did he fall, based on the taxable income? (3)

5.1.2 Which tax rebates does he qualify for? (3)

5.1.3 Ben earns taxable income of R809 500 as a superintendent in 2023/2024.

Calculate the amount of monthly tax Ben must pay for the 2023/2024 tax year. (9)

5.2 TABLE 8 below shows the composition of certain food types in the human diet per 100g units.

TABLE 8: COMPOSITION OF FOOD TYPES IN THE HUMAN DIET PER 100 GRAMS UNITS

FOOD TYPE	ENERGY (kJ)	PROTEIN (g)	FATS (g)	CARBOHYDRATES (g)	CALCIUM (mg)	IRON (mg)	VITAMIN A (ug)	VITAMIN C (ug)
Bacon	1983	18,0	52,0	0	15	0	0	0
Beans	376	7,0	22	65,9	25	17	298	29
Bread	1072	8,8	1,4	58,1	102	1,8	1,1	0
Butter	3230	0,2	87,3	0,1	1,7	0	2015	1,5
Milk	281	3,9	4,6	5,4	129	0,15	87	0,1

[Adapted from: www.fao.org]

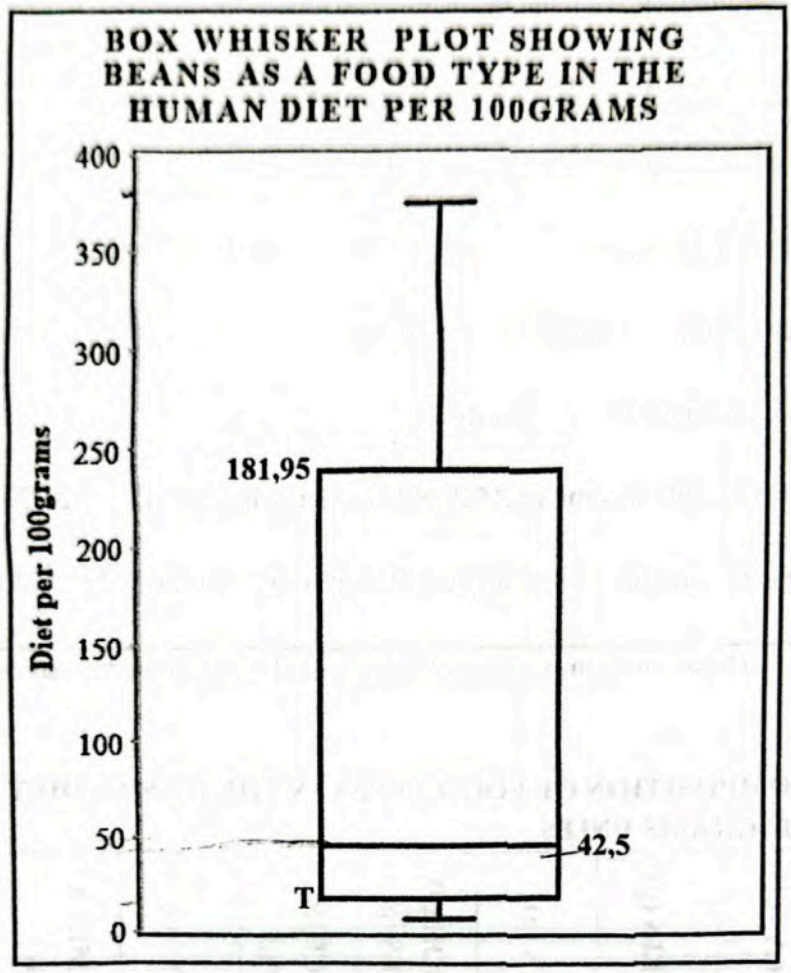
Use TABLE 8 above to answer the questions that follow.

5.2.1 Write down the protein outlier of all the food types. (2)

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5.2.2 Show that the median food type of the milk is 46,2. (3)

5.2.3 The box whisker plot below represents beans as a food type in the human diet per 100 grams.



Use the box whisker plot to answer the question that follow.

The interquartile range of the data above is 162,45.

Calculate, **T**, the lower quartile (Q_1)

You may use the following formula:

$$IQR = Q_3 - Q_1$$

(3)
[23]

TOTAL: 150

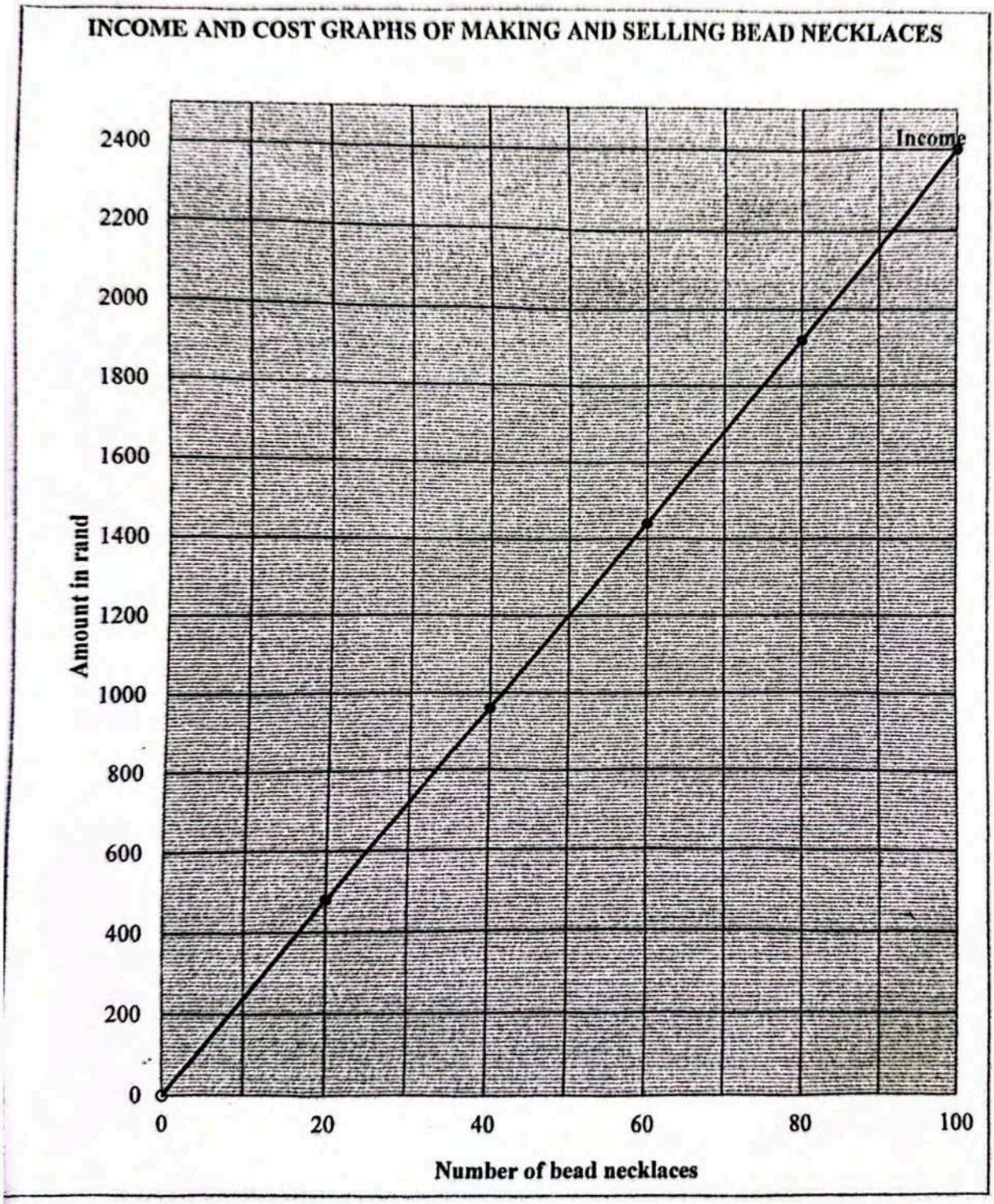
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NAME(S) AND SURNAME: .....

GRADE 12: .....

ANSWER SHEET 1

QUESTION 2.1.3



QUESTION 2

2.1 On the 10th of September 2023 the Zulu Nation had its annual reed dance which was held at KwaNongoma in Kwazulu-Natal. On the day Mandla decided to conduct his business of selling bead necklaces.

It cost him R15,00 to make ONE bead necklace. He calculated that the daily fixed cost was R100,00 and he would be able to sell 100 bead necklace per day. He will sell each bead necklace at R24,00

Use the information above to answer the questions that follow.

2.1.1 TABLE 2 shows the income from the sale of bead necklaces.

TABLE 2: INCOME FROM THE SALE OF BEAD NECKLACES

Number of bead necklaces (n)	0	20	30	40	80	100
Income in rand (R)	0	480	720	A	1 920	2 400

(a) Determine the value of A in TABLE 2 above. (2)

(b) Write down an equation that can be used to calculate the income. (2)

(c) Identify the independent variable in TABLE 2. (2)

2.1.2 Mandla uses the following formula to determine the cost price of the bead necklace.

Cost = R100,00 + R15,00 × *n*, where n = number of bead necklace(s)

TABLE 3 shows the cost price for a number of bead necklace.

TABLE 3: COST PRICE OF A NUMBER OF BEAD NECKLACES

Number of bead necklaces (n)	0	B	30	55	80	100
Cost price in rand (R)	100	250	550	925	1 300	1 600

Calculate the value of B in TABLE 3 above. (3)

2.1.3 The graph on ANSWER SHEET 1 shows the total income for selling up to 100 bead necklaces. Use the information in TABLE 3 to draw another graph representing the cost from the selling of up to 100 bead necklaces. (3)

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ADDENDUM

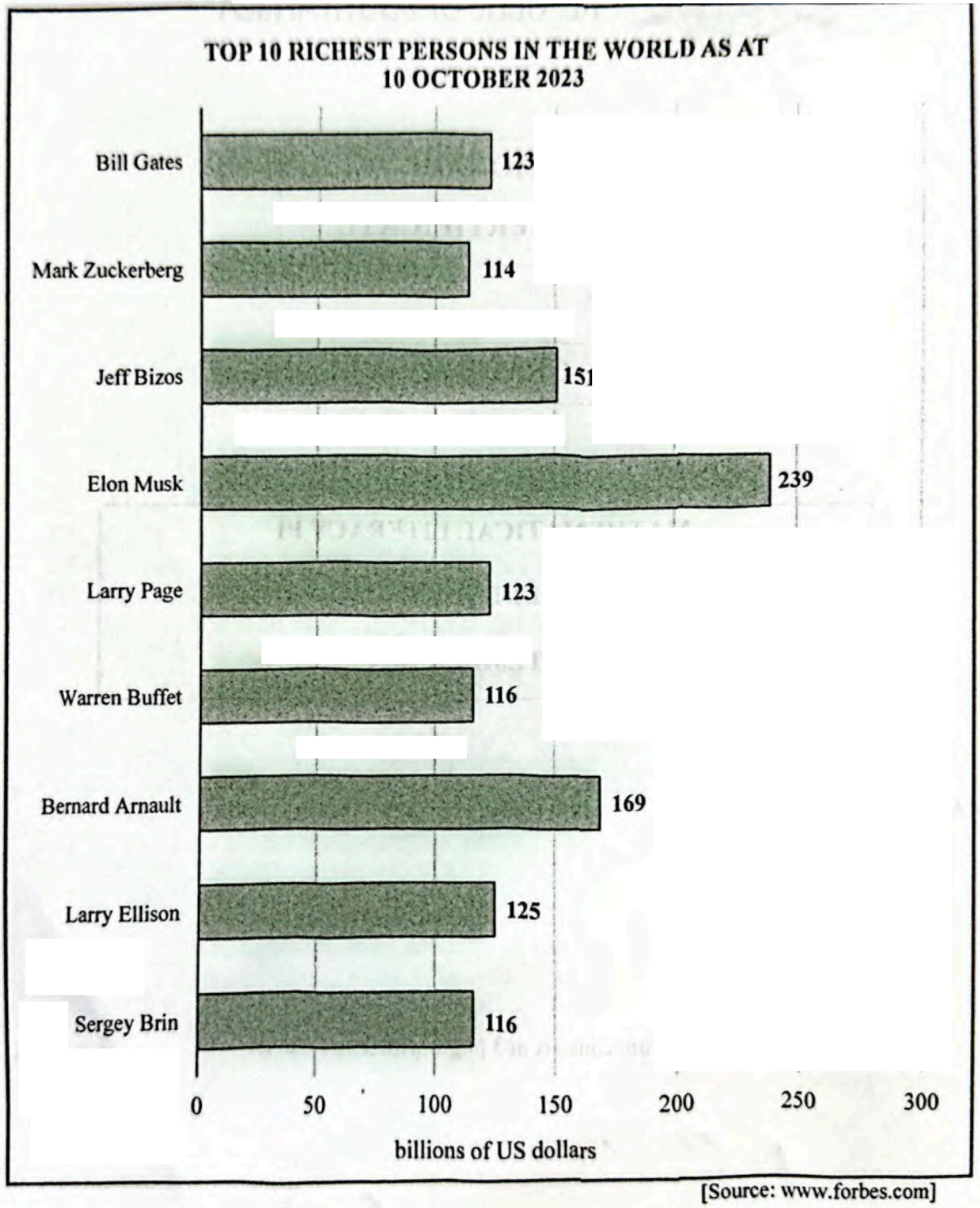
SEPTEMBER 2024

MARKS: 150

This addendum consists of 3 pages with 2 annexures.

ANNEXURE A

QUESTION 4.2



[Source: www.forbes.com]

ANNEXURE B

QUESTION 5.1

TABLE 7: TAX RATES FOR 2023/2024 TAX YEAR (1 March 2023 – 29 February 2024)

2023/2024 SARS Tax Table			
Taxable Income (R)		Rate of Tax (R)	
A	0 – 237 100	18% of taxable income	
B	237 101 – 370 500	42 678 + 26% of taxable income above 237 100	
C	370 501 – 512 800	77 362 + 31% of taxable income above 370 500	
D	512 801 – 673 000	121 475 + 36% of taxable income above 512 800	
E	673 001 – 857 900	179 147 + 39% of taxable income above 673 000	
F	857 901 – 1 817 000	251 258 + 41% of taxable income above 857 900	
G	1 817 001 – and above	644 489 + 45% of taxable income above 1 817 000	
TAX REBATES		VALUE	TAX THRESHOLD
Primary rebate:		R17 235	R95 750
Secondary rebate: (Persons 65 to 74 of age)		R9 444	R148 217
Tertiary rebate: (Persons 75 years and older)		R3 145	R165 689
MONTHLY MEDICAL SCHEME FEES TAX CREDITS			
Main member		R364	
First dependant		R364	
Each additional dependant		R246	

[Source: www.sars.gov.za]

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