GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PREPARATORY EXAMINATION

2024

10601

MATHEMATICAL LITERACY

(PAPER 1)

TIME: 3 hours

MARKS: 150

10601E

11 pages and an addendum with 7 annexures

X05

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 4.1
    - ANNEXURE C for QUESTION 4.2
    - ANNEXURE D for QUESTION 4.3
    - ANNEXURE E for QUESTION 4.3
    - ANNEXURE F for QUESTION 5.2
    - ANNEXURE G for QUESTION 5.3

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

4. Start EACH question on a NEW page.

5. An approved calculator (non-programmable and non-graphical) may be used, 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. Write neatly and legibly.

QUESTION 1

1.1 Sally Harley, a marketing executive, works from Mondays to Fridays from 07:00 to 15:00 at the Johannesburg Zoo, where she promotes the Joburg Zoo.

Her salary advice for the month of July 2024 is displayed below.

SALARY ADVICE

Joburg City Parks

Joburg ZOO

JHB Zoo
Jan Smuts Avenue
Parkview
Johannesburg

Employment date: 2018-06-23
Pay period: 2024-07-31
Worked days: 26

Employee's Name: **Sally Harley**
ID Number: 9206304998076
Designation: Marketing Executive
Department: Marketing

INCOME	AMOUNT	DEDUCTIONS	AMOUNT
Basic salary	R18 500	Provident fund	R1 200
Travelling allowance	R2 500	PAYE	R2 186,78
Housing rental allowance	R3 000	Medical aid	R1 390
Meal allowance	R2 100		
Gross income	R26 100	Total deductions	**A**
		Nett Salary	**B**

Use the information above to answer the questions that follow.

1.1.1 Define the term *gross income* in context. (2)

1.1.2 Write down the gross income amount in words. (2)

1.1.3 Provide the month in which the salary advice was issued. (2)

1.1.4 Determine the missing values of **A** and **B**. (4)

1.1.5 Determine Sally's age, in years and months, on the date that she receives this payment. (2)

1.1.6 Write down the term PAYE in full. (2)

1.2 Sally is planning to visit her family in Sweden during December to experience a white Christmas. She decided to save up her travel and meal allowances for one year to ensure that she will have enough money for meals, transportation, and entertainment. The current exchange rate is 1,82 ZAR (South African Rand) for 1 SEK (Swedish Krona)

Use the information above to answer the questions that follow.

1.2.1 Between the two countries, which currency is stronger? (2)

1.2.2 Convert 28 573 South African Rand to Swedish Krona. (2)

1.3 The table below contains a list of explanations and definitions of concepts used in Mathematical Literacy. Match the word(s) given with the appropriate description from the table. Write only the correct letter (A–G) next to the question numbers (1.3.1 to 1.3.4) e.g. 1.3.5 H

Table 1: Definitions of concepts

A	The set of data includes all values
B	A company that collects taxes on behalf of the government
C	The sum of all values divided by the number of values
D	The number that appears the most in a set of data
E	A table that is used to calculate personal income tax for individuals
F	This set of data contains whole numbers only.
G	The number in the middle, after an odd data set is arranged in chronological order

1.3.1 Median (2)

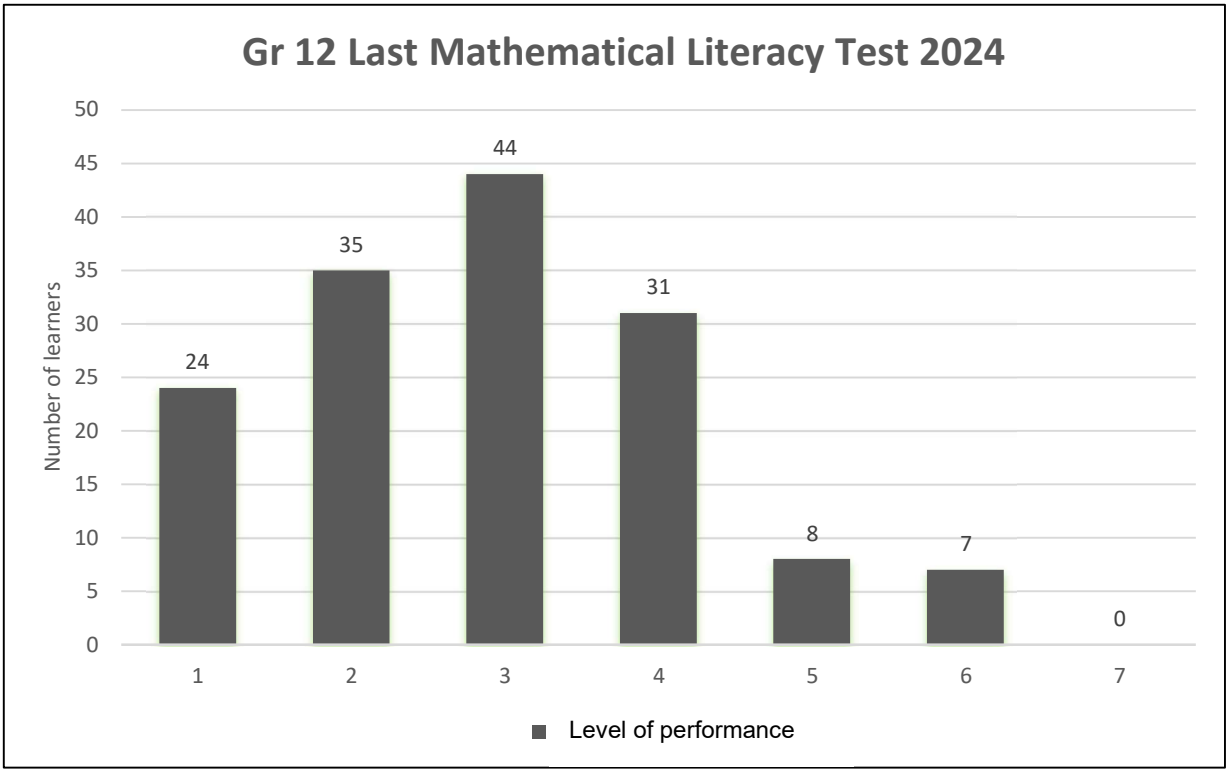
1.3.2 SARS (2)

1.3.3 Mode (2)

1.3.4 Discrete data (2)

1.4 Below is a graph that represents the level of performance of the learners from Jabulani Secondary School for the last test that was done at the beginning of August 2024.

The performance is represented by levels 1 to 7.



Level 1 : 0 – 29% Level 2 : 30 - 39% Level 3 : 40 – 49% Level 4 : 50 – 59% Level 5 : 60 – 69% Level 6 : 70 – 79% Level 7 : 80 – 100%

1.4.1 Identify the type of graph that is used to represent this data. (2)

1.4.2 Determine the level where no learner achieved. (2)

[30]

QUESTION 2

2.1 Mr and Mrs De Klerk plan to renew their wedding vows at the Ennyani wedding venue. They are comparing the costs of a weekday and a weekend package. They plan to invite 42 couples and 12 single people. (The singles include Mr De Klerk's mother and Mrs De Klerk's father, who are retired and over 65 years old, 4 children under the age of 5, and 6 children above 5 years old). The table below indicates the prices for the Ennyani wedding venue on Monday to Thursday and on a Saturday and Sunday.

Table 2: Extract from a budget for a wedding venue

	Days of the week		
	Saturday	**Sunday**	**Monday – Thursday**
Venue hire	R15 650	R13 450	R0
Price per person	R 432	R432	R515
Minimum number of guests	50	40	40
Maximum number of guests	100	100	100

[Adapted from *https://www.ennyani.co.za/wedding-venues/calculator*]

NOTE:

All prices include 15% VAT.

Children under the age of 5 pay 25% of the price per person as they do not eat as much.

Children above the age of 5 pay full price.

Pensioners above the age of 65 pay 60% of the price per person.

If a person cancels the venue more than a month in advance, they receive 85% of the venue hire cost back and 90% of the price paid per person.

If a person cancels the venue less than a month in advance, they receive 60% of the venue hire cost back and 78% of the price paid per person.

Use the information above to answer the questions that follow.

2.1.1 Calculate the price per person, excluding VAT, for a Saturday. (2)

2.1.2 Mr and Mrs De Klerk decided to have their wedding on a Thursday instead of on a Saturday, to save money.

(a) Determine the amount the family would have saved on the total cost of the reception, including VAT. (10)

(b) Hence, calculate the refund that Mr and Mrs De Klerk would receive if they cancelled their wedding more than a month in advance. (3)

PLEASE DETACH THIS ADDENDUM

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MATHEMATICAL LITERACY

ADDENDUM

(PAPER 1)

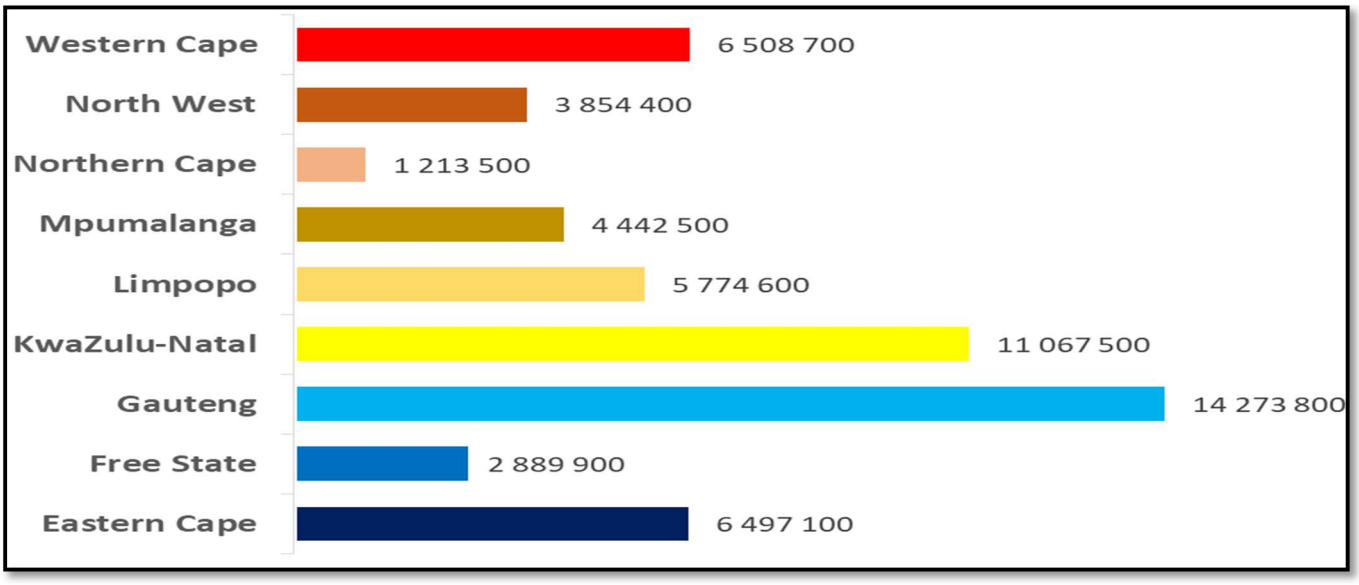
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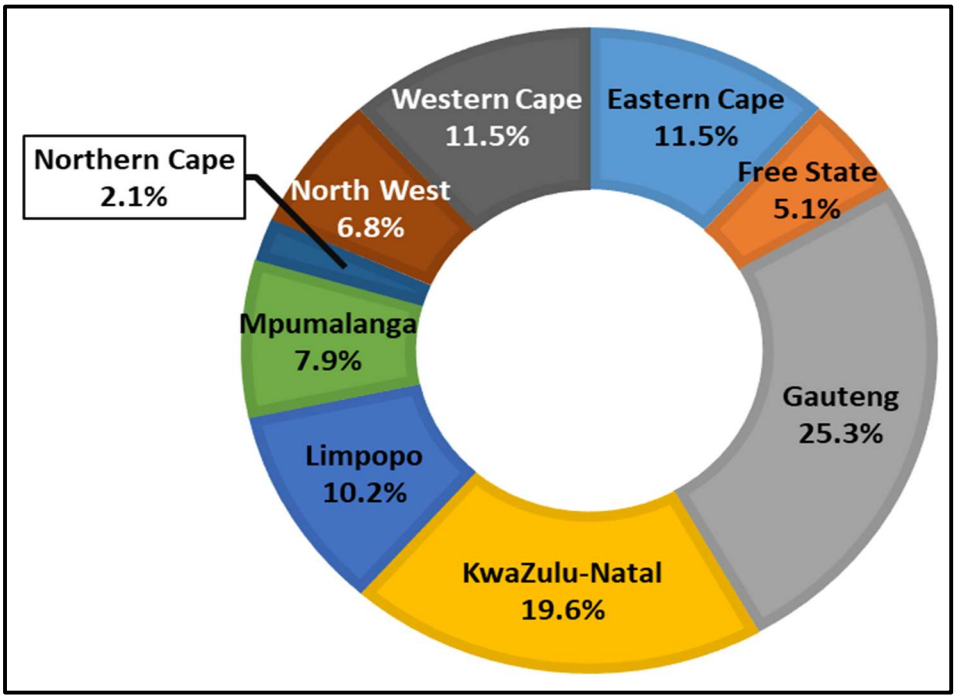
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ANNEXURE A

QUESTION 3.1

The population of South Africa's nine provinces





[Source: *https://southafrica-info.com/infographics/infographic-population-south-africas-nine-provinces/*]

ANNEXURE B

QUESTION 4.1

2023/2024 Annual income tax deductions for individuals and special trusts

Taxable income (R)	Rates 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 857 900
1 817 001 and above	644 489 + 45% of taxable income above 1 817 000

Tax Rebate	**Tax year**		
	2024	**2023**	**2022**
Primary	R17 235	R16 425	R15 714
Secondary (65 and older)	R9 444	R9 000	R8 613
Tertiary (75 and older)	R3 145	R2 997	R2 871

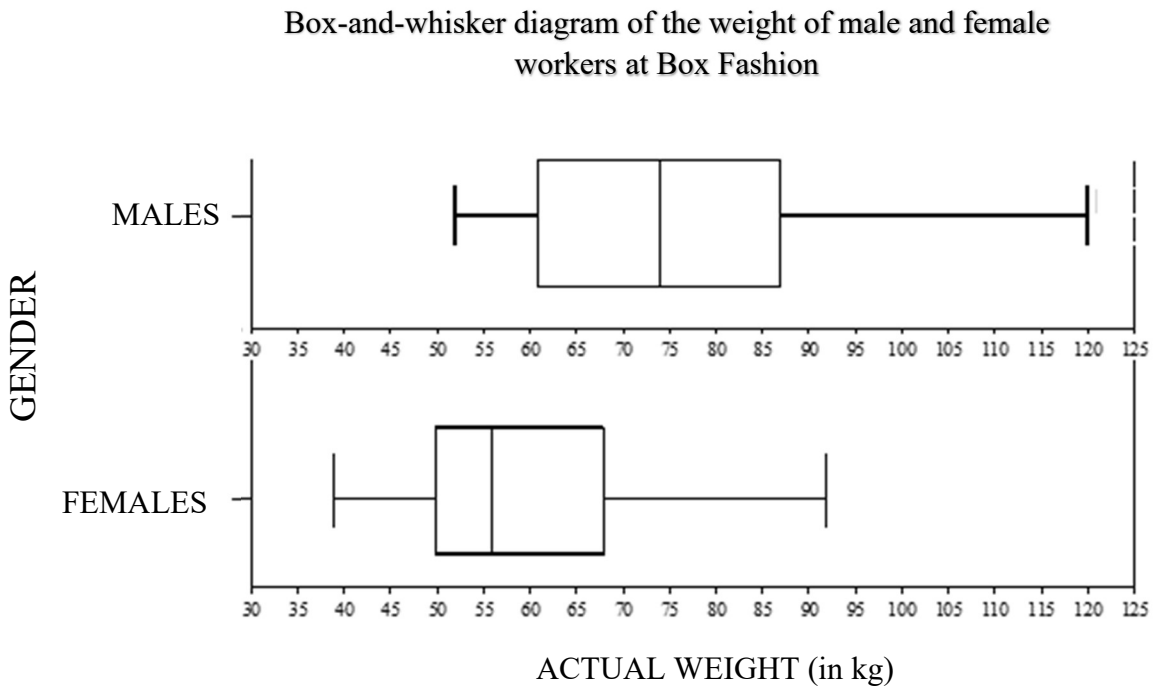
Tax Thresholds	**Tax year**		
	2024	**2023**	**2022**
Under 65	R95 750	R91 250	R87 300
65 and older	R148 217	R141 250	R135 150
75 and older	R165 689	R157 900	R151 100

Medical Tax Credit	**Tax year**		
Per month (R)	**2024**	**2023**	**2022**
For the taxpayer	R728	R694	R664
For the first dependant	R728	R694	R664
For each additional dependant	R246	R234	R224

[Source: Adapted from *https://www.SARS.gov.za*]

ANNEXURE C

QUESTION 4.2



ANNEXURE D

QUESTION 4.3

Statement of Account/Tax Invoice

Standard Bank

P O BOX 8296
JOHANNESBURG 2000
0860 000 000

2ND FLOOR
33 BAKER STREET
ROSEBANK

Statement Details

MR PHILLIP TSHABALALA
66 THE HIGHWAY
FLORIDA
1712

Page	1 of 2
Date	05/01/2024
Statement Period	05/12/2023 to 04/01/2024
Agreement Number	0000795381/1
NCA Reg No.	NGRCP15
VAT Registration No.	4100095461

Payment Information	
Principal Debt	R269 439,15
Instalment	**A**
Service Fee	*R69,00
LPI/Other Charges	R0,00
Total Arrears	0,00
Advance	0,00
Payable On	20/01/2024
Account Summary	
Goods Description	RENAULT KIGER 1.0T ZEN 2021
Contract Period	60 Months
Pay Frequency	Monthly
Period to Expiry	59 Months
Interest Rate	13,45% per year
Balloon/Residual	R0
Total balance brought forward	R450 636,98
Total balance carried forward	R443 057,36
Total Paid to Date	R7 579,62

*These items are inclusive of 15% VAT
*Before 2019 VAT was 14%

Look out for some exciting developments – you'll soon be able to conveniently manage your VAF account on the Standard Bank App. In the meanwhile, you can contact 0860 000 000 or email HomeNCar@standardbank.co.za for all VAF related queries.

ANNEXURE E

QUESTION 4.3

Statement of Account/Tax Invoice



P O BOX 8296
JOHANNESBURG 2000
0860 000 000

2ND FLOOR
33 BAKER STREET
ROSEBANK

Statement Details

MR PHILLIP TSHABALALA
66 THE HIGHWAY
FLORIDA
1712

Page	2 of 2
Date	05/01/2024
Statement Period	05/12/2023 to 04/01/2024
Agreement Number	0000795381/1
NCA Reg No.	NGRCP15
VAT Registration No.	4100095461

Invoice No: 999/24/1357566 **Agreement: 0000795381/1**

Transaction details

Date	Reference	Amount	Outstanding Total Balance
	Balance brought forward		R450 636,98
20/12/2023	Receipt		R443 126,36
20/12/2023	Service Fee	*R69,00	R443 057,36
	Balance Carried Forward		R443 057,36

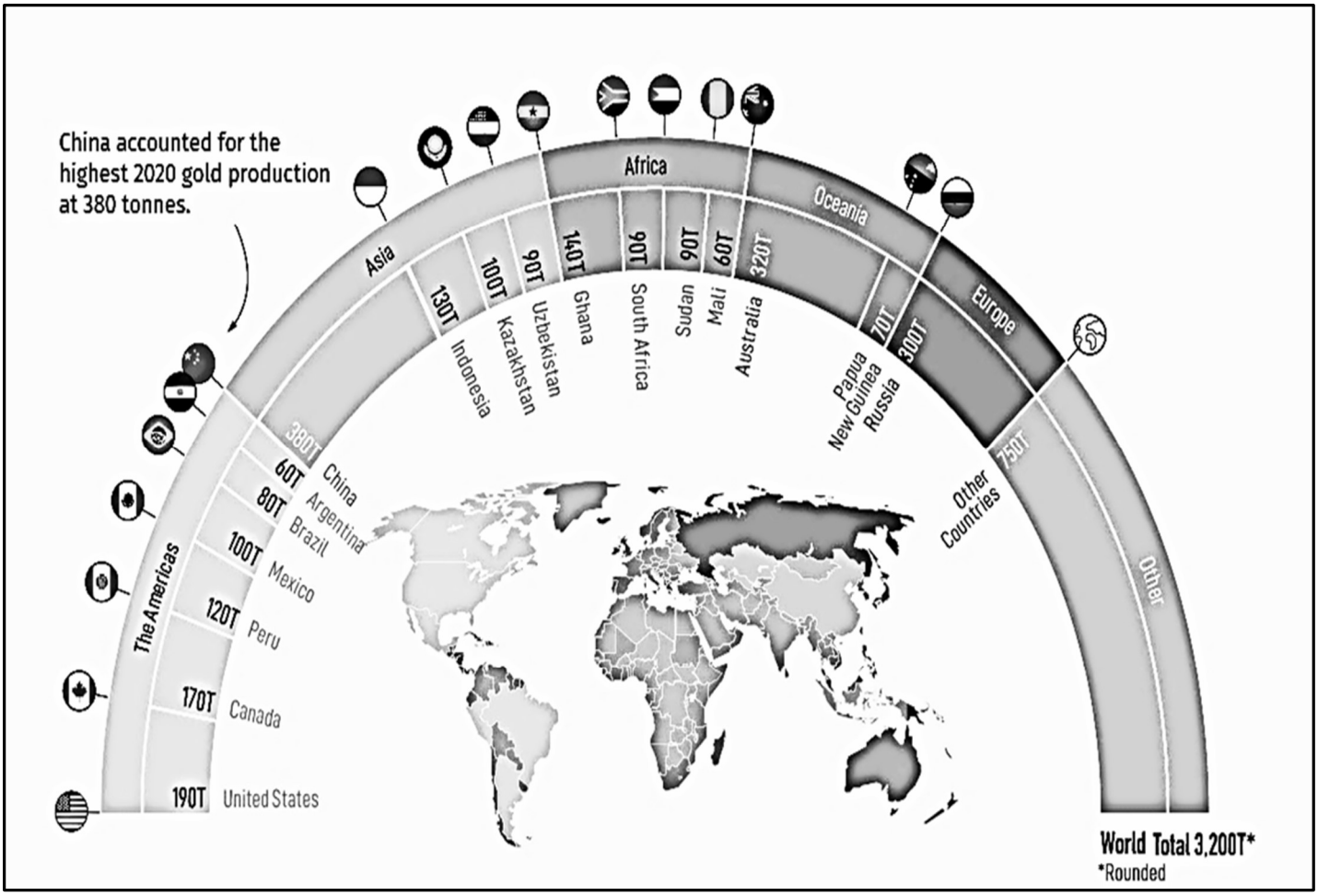
*These items are inclusive of 15% VAT

ANNEXURE F

QUESTION 5.2

GLOBAL GOLD PRODUCTION

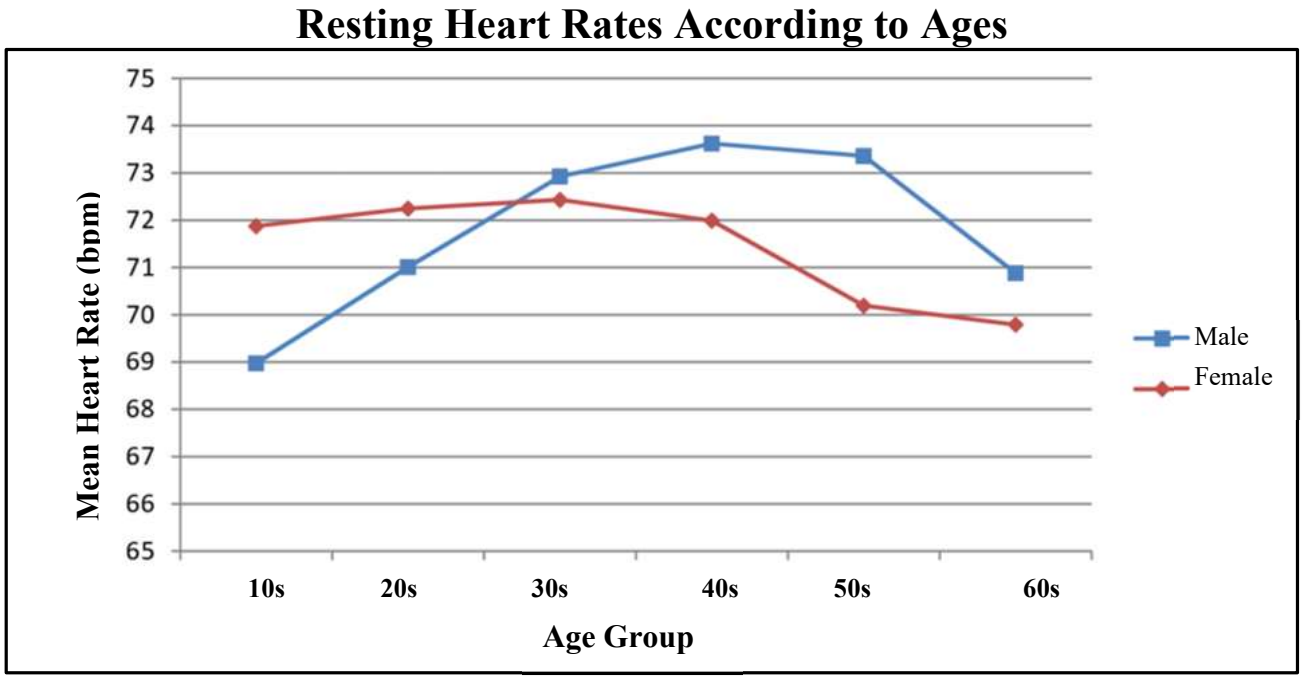
2023 GLOBAL GOLD PRODUCTION FOR VARIOUS COUNTRIES (GIVEN IN TONNES)



[Source: ***www.google.com/search?sca_esv=bc4b5e46aeab13ae&q=gold+production&tbm=isch&source=lnms&sa=X&ved=2ahUKEwi6r97_ncyEAxVYaEEAHdcYAOwQ0pQJegQIDRAB&biw=1920&bih=960#imgrc=FQ2TVNvAI2R__M*** **]**

ANNEXURE G

QUESTION 5.3



END

(c) Determine the percentage, rounded to the nearest ten, the family would save if they were having the wedding on a Thursday.

The following formula can be used:

$$\textbf{\% savings} = \frac{Savings}{Saturday\ cost} \times 100$$ (3)

2.1.3 Provide a reason why the venue is more cost effective during the week than over the weekends. (2)

2.2 Ennyani wedding venue is situated in Krugersdorp, which falls under the Mogale City Municipality. Mogale City Municipality has two tariff structures that they use to calculate the cost of water consumption. In Table 3 below the two tariffs are given; one is a normal rate when there is a sufficient supply of water, and the other is an increased rate during times where there is a water shortage.

Table 3: Water Tariff Structure for Mogale City

Water consumption	Normal rate R/kl (Including VAT)	Water shortage rate R/kl (Including VAT)
0 – 60 kl	R18,12	R29,93
61 – 150 kl	R29,86	R52,44
151 – 300 kl	R36,58	R89,00
301 – 450 kl	R45,52	R114,44
> 451 kl	R56,12	R179,47

[Adapted from *https://www.ekurhuleni.gov.za/for-me/tariffs/*]

2.2.1 Ennyani wedding venue consumes an average of 971 kl of water per month. The manager at the Ennyani wedding venue states that they pay more than R150 000 when there are water shortages.

Verify, showing ALL calculations, whether his statement is correct. (6)

2.2.2 Why is a sliding scale used when the cost related to water usage is calculated? (2)

2.2.3 Determine the probability, as a decimal fraction, that there is a rate lower than R30 per kilolitre during normal water distribution. (3)

[31]

QUESTION 3

3.1 Study ANNEXURE A to answer the questions that follow.

3.1.1 Identify the province with the largest population. (2)

3.1.2 Show that the total population of South Africa is 56 522 000. (2)

3.1.3 Show how the population percentage for Mpumalanga was calculated. (3)

3.1.4 Neesah looked at the percentages and stated that there are two provinces with the same percentages, but with a different number of people for the provinces in terms of their population. Identify the TWO provinces and determine the population difference. Explain why the percentages can be the same but the population numbers are different. (4)

3.2 The following two tables show the results for Grade 12 learners for their June Examination in Mathematical Literacy (Paper 1). Study the tables and answer the questions that follow.

The results are given as a total out of 100.

Table 4: Class A

34	84	22	34	65	49	33	37	45	56
32	69	52	43	34	48	88	92	35	46
72	75	26	38	42	34	83	79	30	28

Table 5: Class B

24	46	85	32	30	67	51	89	73	44
26	21	66	49	**A**	54	36	92	20	48
33	39	43	31	25	69	78	81	18	60

3.2.1 Is this an example of DISCRETE or CONTINUOUS data? (2)

3.2.2 Determine the median for Class A. (3)

3.2.3 Calculate the value of **A** for Class B if the mean is 48,53. (4)

3.3 In a kickboxing class the learners were measured, and their heights (in metres) were recorded as follows:

Table 6: Height (in m)

1,44	1,85	1,62	1,48	1,23
0,88	1,38	1,82	2,04	0,82
1,75				

Bruce Lee stated that the range height for this set of data is more than double the height of the shortest learner. Show, by means of calculations, whether his statement is correct. (5)

[25]

QUESTION 4

4.1 Mr Tshabalala is a 32-year-old man that works for Box Fashion. He oversees the packaging of the boxes that must be distributed to customers. He receives a monthly gross income of R 32 542,80. He contributes 7,5% towards his pension fund. Mr Tshabalala is married and has 4 children. He contributes towards a medical aid for himself and his family.

Refer to ANNEXURE B, Annual income tax deductions for individuals and special trusts.

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

4.1.1 Calculate Mr Tshabalala's annual taxable income. (5)

4.1.2 Calculate Mr Tshabalala's medical tax credit for the 2024 financial tax year. (3)

4.1.3 Calculate Mr Tshabalala's monthly tax contribution. (7)

4.1.4 Mr Tshabalala's mother is 65 years old and earns a taxable income of R10 321 per month. Mr Tshabalala claims that his mother is earning below the tax threshold for 2024, thus she is not supposed to contribute towards personal income tax.

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

4.1.5 Show how the fixed amount of R179 147 in tax bracket 5 was calculated. (3)

4.2 Mr Tshabalala did some research on the weight of the workers at Box Fashion. His results are represented in the box-and-whisker plot in ANNEXURE C. Study the diagram in ANNEXURE C and answer the questions that follow.

4.2.1 Write down the median weight of the female workers. (2)

4.2.2 Explain the meaning of the value 50 in the box-and-whisker plot for females. (2)

4.2.3 Mr Tshabalala stated that the interquartile range of the male workers is double that of the female workers. Determine the difference between the interquartile range of male workers and female workers and decide whether his statement is valid. (4)

4.3 Mr Tshabalala bought his wife a new Renault Kiger. This car is financed by Standard Bank as he could not afford to buy the car for cash. Standard Bank allowed him to pay for the vehicle on a hire purchase agreement with a deposit of 15,8%. The cash price of the Renault Kiger is R319 999.



Use the information above and ANNEXURE D as well as ANNEXURE E to answer the questions that follow.

4.3.1 Calculate the deposit amount for the Renault Kiger. (2)

4.3.2 Calculate the instalment per month (**A**), for this vehicle. (5)

4.3.3 The service fee for Standard Bank is VAT inclusive. In 2018 the service fee was the same amount as on the statement. Calculate the VAT exclusive amount of the service fee in 2018. (2)

4.3.4 Verify the closing balance of R443 057,36 on 20/12/2023 in ANNEXURE E. (2)
[40]

QUESTION 5

5.1 Mr Pillay's daughter plans to get married in two years, and he has decided to invest money into an Allen Gray account so that he can save towards the wedding. He decides to invest R13 000 into this account. Allen Gray offered him 17,59% p.a, compounded half yearly, for a period of two and a half years.

NOTE: *An annuity is a form of insurance or investment entitling the investor to a series of annual sums.*

5.1.1 Calculate the total amount that Mr Pillay will have in his account after two years. (6)

5.1.2 Mr Pillay's daughter asked her father to only pay for the wedding with the interest accumulated on the investment and keep the capital amount invested. Calculate the amount that Mr Pillay paid towards the wedding. (2)

5.2 Mr Pillay investigates the production of gold across the globe to determine the best options to invest his money. He found the following information given in ANNEXURE F. Study the gold production information in ANNEXURE F to answer the questions that follow.

5.2.1 Show how the total production, rounded-off to 3 200 tonnes, was calculated. (2)

5.2.2 Determine the percentage that Mexico contributed to the global gold production, rounded-off to the nearest percentage. (3)

5.2.3 Identify the gold production for Australia and South Africa. Why do you think the gold production in Australia is so much higher than in South Africa? (3)

5.3 Jason conducted a study on resting heart rates across age groups from 10-year olds up to 60-year-olds. He represented the data in the graph that is shown in ANNEXURE G. Study ANNEXURE G and answer the questions that follow.

5.3.1 Which age group has the highest mean heart rate? (2)

5.3.2 Determine the probability of one of the participants being 65 years old. (2)

5.3.3 Explain the trend of the graph that represents the resting heart rate for men in the age group 10 to 60 and give a possible reason for this trend. (4)

[24]

TOTAL: 150

END