education

Department of Education
FREE STATE PROVINCE

PREPARATORY EXAMINATION

GRADE 12

MATHEMATICAL LITERACY P1

SEPTEMBER 2023

MARKS: 150

TIME: 3 HOURS

This question paper consists of 13 pages and an addendum with 4 annexures.

Stanmorephysics

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 4.1
   - ANNEXURE C for QUESTION 4.1.3
   - ANNEXURE D 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. 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. Pictures and diagrams are NOT necessarily drawn to scale unless stated otherwise.

10. Write neatly and legibly.



QUESTION 1

1.1 Thando received the slip below after purchasing prepaid water at one of the approved vendors.



PREPAID WATER SLIP

Blue Approved
Tax Invoice
Mangaung Metropolitan Municipality
Credit Token
3974 0445 6670
6712 5026

6 kℓ	@ 9,6600 R/kℓ	= R57,96
9 kℓ	@ 22,7200 R/kℓ	= R204,48
15 kℓ	@ 25,2300 R/kℓ	= ...
22, 4 kℓ	@ 29,6900 R/kℓ	= R665,056

Amount:	R1 305,95
VAT @ 15%:	R195,89
Total:	R1 501,84
Free Units:	0,00 kℓ
Credit Units:	52,40 kℓ

Total Units : 52,50 kℓ

Receipt No:		01166515
Meter No:		41150801599
Date:	25/02/2022	18:20:27

[Adapted from actual slip]

Use the information above to answer the questions that follow.

1.1.1 Write down Thando's water meter number. (2)

1.1.2 Identify the maximum number of kilolitres that can be bought at R9,6600 per kilolitre. (2)

1.1.3 Write down in full the type of tax charged for water as shown in the context above. (2)

1.1.4 Show how the VAT amount was calculated. (2)

1.1.5 Define the term *tariff* in the given context. (2)

1.1.6 Determine the missing value, the cost of using 15 kℓ of water in the context above. (3)

1.2 Below is the monthly number of trips made by two local taxis between Thaba-Nchu and Botshabelo from January to December.

TAXI 1

104 103 124 130 118 118 42 110 121 108 113 117

TAXI 2

74 87 90 98 103 105 110 112 119 120 117 126

Use the information above to answer the questions that follow.

1.2.1 State whether the data above is regarded as numerical or categorical. (2)

1.2.2 Identify the outlier of the monthly taxi trips. (2)

1.2.3 Arrange, in ascending order, the number of monthly trips for TAXI 1. (2)

1.2.4 Determine the month in which the most trips were made by TAXI 2. (2)

1.2.5 The *IQR* for TAXI 1 is 13,5. Write out *IQR* in full. (2)

1.3 Mpumi crafts wooden birds that he sells at a tourist attraction in Mpumalanga.

- The birds will be black (B) or white (W) in colour.
- Each bird will have a touch of either red (R), yellow (Y) or green (G) colour.

EXAMPLE OF WOODEN BIRDS



The table below illustrates the different options of bird colour and touch.

	Red touch	**(i)**	Green touch
Black bird	BR	BY	BG
White bird	**(ii)**	WY	WG

Study the information above to answer the questions that follow.

1.3.1 Name the type of illustration represented by the table above. (2)

1.3.2 Complete the missing labels (**i**) and (**ii**). (4)

1.3.3 Determine the total number of possible outcomes. (2)

[31]

QUESTION 2

2.1 TABLE 1 on ANNEXURE A, indicates the expenditure in different National Departments in the South African government.

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

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

2.1.2 Show how the total amount of 522,8 was calculated. (2)

2.1.3 Give ONE possible reason why the expenditure for the compensation of employees in the basic education department is higher than that of other departments. (2)

2.1.4 The Department of home affairs was allocated a total of R11,2 billion in 2019/20 financial year.

Calculate the percentage expenditure incurred by this department in 2019/20 and state whether the department had a surplus or a deficit. (4)

2.1.5 Give ONE example of the type of transport that can be purchased by the department of police services. (2)

2.1.6 The capital spending for community development in 2018/2019 was R520 000 000 less than that of 2019/20.

Determine the capital spending in 2018/19. (4)

2.1.7 The South African government decided to invest R50 000 000 from the contingency reserve at an interest rate of 6,8%, compounded annually, for 1 year and 6 months.

Calculate the final amount at the end of the investment period. (5)

2.2 Thabo who is an employee at the department of health is banking at STAN bank.

TABLE 2 below indicates the banking fees at STAN bank.

TABLE 2: STAN BANK 2021/2022 BANKING FEES.

	2021 Fees	**Transaction Fee for R500 in 2021**	**2022 Fees**	**Transaction Fee for R500 in 2022**	**% Change**
Withdrawal (Own bank)	R7,50 per R1000	R7,50	R2,00 per R100	R10,00	...
Withdrawal (Other banks)	R10,00 per R1000	R10,00	R2,20 per R1000	R11,00	+10,0%
Withdrawal (Point of Sale)	R1,40	R1,40	R1,40	R1,40	0%
Deposit (ATM)	R9,00 per R1000	R9,00	R1,00 per R100	R5,00	-44,4%
Debit order (internal/external)	R3,50		R3,50		0%
Account fee	R110,00		R110,00		0%

[adapted source: www.businesstech.co.za]

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

2.2.1 Determine the percentage change between 2021 and 2022 of the transaction fees for a withdrawal at Thabo's own bank. (4)

2.2.2 Thabo made a withdrawal of R2 000 in 2022. He then stated that he saved more than R30,00 in banking fees when withdrawing from the point of sale compared to his own bank.

Verify, showing all calculations, if his statement is valid. (6)

[31]

QUESTION 3

3.1 TABLE 3 below shows the number of household crime records in South Africa for the past 5 years.

TABLE 3: NUMBER OF HOUSEHOLD CRIMES IN SOUTH AFRICA

Types of crime	Number of crimes (in thousands)				
	2018	**2019**	**2020**	**2021**	**2022**
House breaking	2 171	2 214	2 270	1 935	2 199
Home robbery	459	449	415	312	394
Theft of motor vehicle	233	256	277	212	163
Deliberate damage to property	98	160	182	**	**
Murder	43	53	53	43	40
Assault	**	**	117	125	213
Sexual offences	**	**	39	25	32
TOTAL	**3 004**	**3 132**	---		**3 041**

[Source: www.statssa.gov.za]

Use TABLE 3 above to answer the questions that follow.

3.1.1 State the data collection tool used to collect the above data. (2)

3.1.2 Show how the value of 3 041 was calculated. (2)

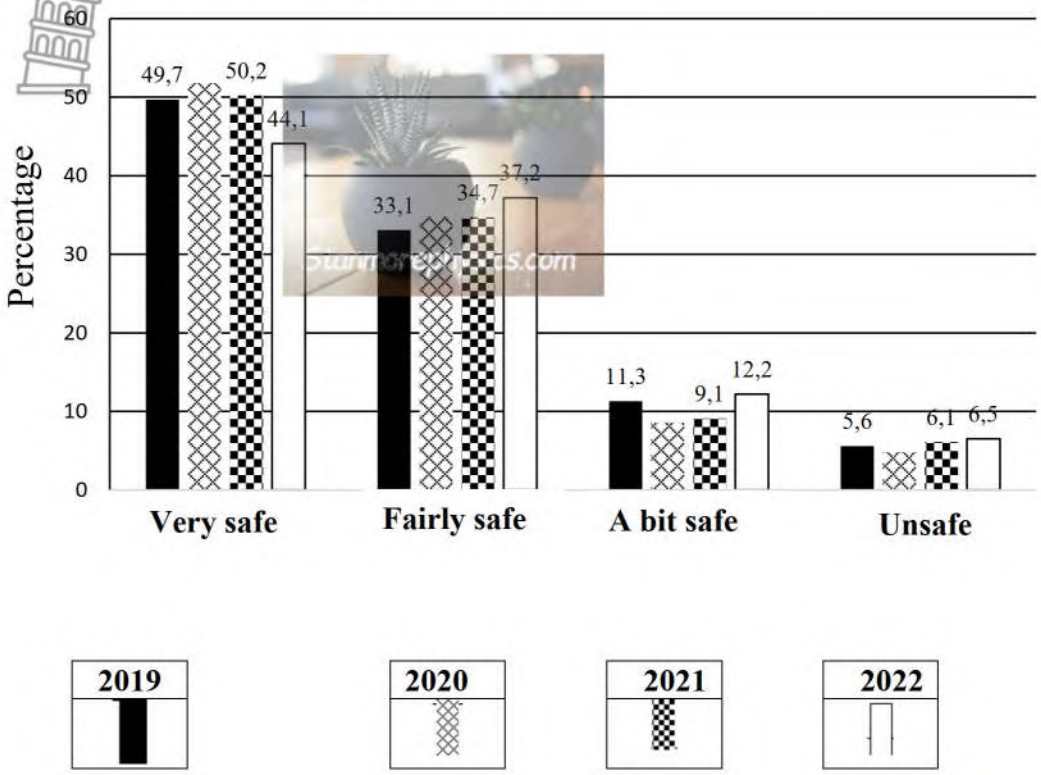
3.1.3 Write down the number of home robberies in 2019. (2)

3.1.4 Calculate the mean number of home robberies in South Africa from 2018 to 2022. (4)

3.1.5 Give a possible reason why some crimes are illustrated by the symbol (**). (2)

3.2 The graph below indicates the safety level of people in their residential area during the day.

FEELING OF SAFETY (in %) WHEN WALKING IN THE RESIDENTIAL AREA DURING THE DAY FROM 2019 TO 2022.



[Source: www.statssa.gov.za]

Use the information above to answer the questions that follow.

3.2.1 Name the type of graph drawn above. (2)

3.2.2 Determine the increase in the percentage of people who felt fairly safe between 2019 and 2022. (3)

3.2.3 The number of people who felt unsafe when walking in a residential area during the day in 2020 was 2,85 million.

Determine the number of people (to the nearest 100 000) in South Africa in 2020. (3)

3.2.4 The percentage range for the people who felt very safe is 7,7% and the lowest percentage is 44,1%.

Calculate the highest percentage of the people who felt very safe. (4)

[24]

QUESTION 4

4.1 Mr Jones, a 43-year-old teacher received the tax document on ANNEXURE B for the tax year 2021/2022.

Mr Jones is also a medical aid member and contributes to himself and his daughter.

The medical tax credits for the tax year 2021/2022 are given in TABLE 4 below:

TABLE 4: MEDICAL TAX CREDITS FOR THE TAX YEAR 2021/2022

	Amount
Main member	R332
First dependent	R332
Each additional dependant	R224

[Source: www.sars.gov.za]

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

4.1.1 State the name of this tax certificate. (2)

4.1.2 Write down the number of months covered by this tax document. (2)

4.1.3 TABLE 5 and 6 on ANNEXURE C show the tax table and tax rebates for the 2021/2022 tax year.

Calculate **B**, the amount of tax Mr Jones paid for the 2021/2022 tax year. (6)

4.1.4 Mr Jones stated that his employer calculated his medical tax credits incorrectly.

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

4.1.5 The inflation rate in 2022 was 7,8%, 4,5% in 2021 and in 2020 it was 3,3%. Mr Jones' salary was R499 413 in 2022.

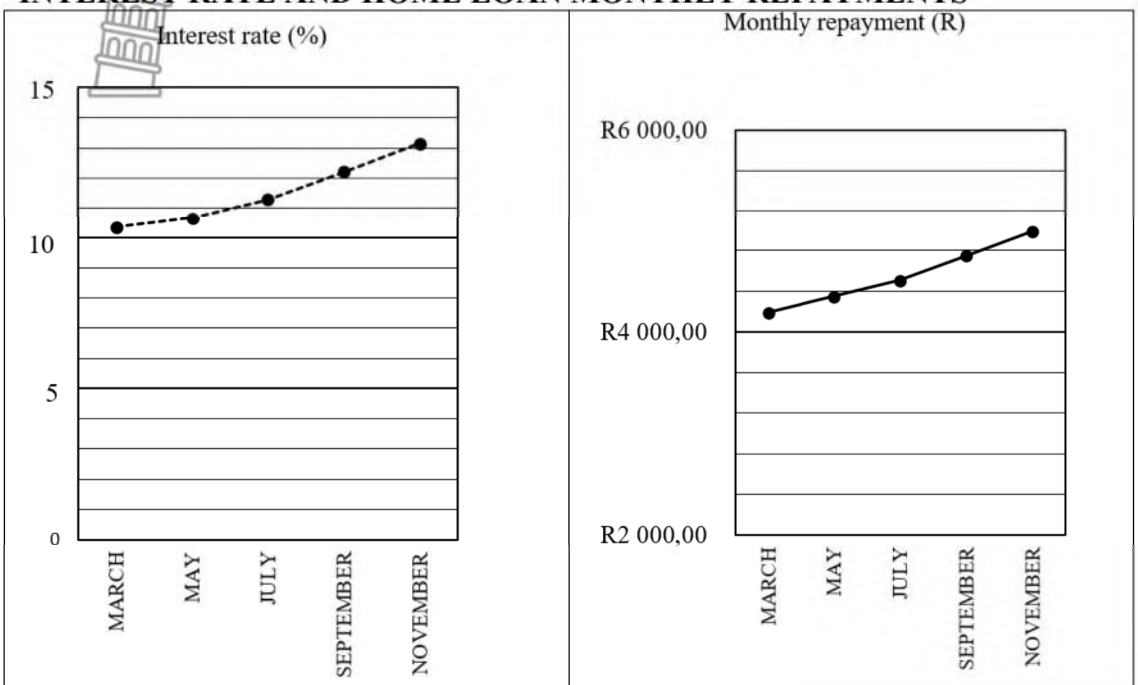
Mr Jones received an inflation-related salary increase in 2022, a monthly increase of R1 000 in 2021 and no salary increase in 2020.

Show with calculations that his salary was R451 277,37 in 2019. (5)

4.2 Joseph has a home loan of R500 000 to be paid over a period of 20 years.

The graph below shows the interest rate and home loan monthly repayments for Joseph for six months in 2022.

INTEREST RATE AND HOME LOAN MONTHLY REPAYMENTS



VALUE OF MONTHLY REPAYMENTS:

March = R4 190,6 ; **May** = R4 345,45; **July** = R4 505,06;
September = R4 749,16 and **November** = R4 988,62

[Adapted from actual home loan statement]

Use the information above to answer the questions that follow.

4.2.1 Explain why the data above is regarded as continuous. (2)

4.2.2 Identify (a) month(s) with an interest rate higher than 11,5%. (2)

4.2.3 Describe any trend shown by the two graphs in relation to each other. (2)

4.2.4 Joseph complained that his monthly repayments will increase by more than R500 from July to September.

Verify, showing all calculations, whether his complaint is valid. (3)

4.2.5 Provide ONE possible reason for how the increase in the interest rate will negatively affect the finances of the homeowners. (2)

4.2.6 State ONE benefit of paying extra hundred rands in addition to the expected instalment in the given context above. (2)

[32]

QUESTION 5

5.1 The pie chart on ANNEXURE D indicates the net worth (in billion dollars) of the top 5 richest persons in the World, Africa and South Africa.

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

5.1.1 Write down the TOTAL NET WORTH amount shown for the five wealthiest people in the world in numerical. (2)

5.1.2 Express as a ratio (in the simplest form), the total net worth of the richest persons in South Africa, Africa and the World respectively. (3)

5.1.3 Calculate the net worth of the third wealthiest person in the world. (3)

5.1.4 Determine the difference in net worth between the wealthiest person in Africa and the wealthiest person in South Africa. (3)

5.1.5 Convert the net worth of \$5,4 billion to rands if the exchange rate is R1 = \$ 0,057. Round off the net worth to the nearest billion. (3)

5.2 Abel is a metered taxi driver. His company charges the following fare for a single trip:

- A minimum call-out fee of R50 per trip with the first THREE kilometres being free.
- Thereafter, R15,00 for each additional kilometre or part thereof.
- The company charges an extra R200,00 per hour if the taxi must wait for a client and the trip will be charged as a single trip.

TABLE 7 below shows the total cost per single trip for different distances travelled.

TABLE 7: TOTAL COST PER SINGLE TRIP FOR DIFFERENT DISTANCES TRAVELLED

Distance (in km)	0	1	3	5	10	20	30
Total cost per single trip (in rands)	0	50	50	80	**A**	305	455

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

5.2.1 Explain the meaning of the term *single trip* in this context. (2)

5.2.2 Calculate the value of **A**. (3)

5.2.3 Write down an equation that Abel can use to calculate the total cost (in rands) per single trip, in the form:

Total cost (in rands) per single trip = … (2)

5.2.4 A client pays Abel R1 505 for a single trip. Determine the total distance (in km) travelled during this trip. (5)

5.2.5 Doris hires a taxi from this company to take her to a meeting venue 20 km from her home. The meeting is scheduled to take exactly ONE hour, and she requests that the taxi wait for her to take her back home.

Doris claimed that it was going to be cheaper for her if she could have called the taxi back after her meeting, instead of making it wait for her.

Verify, showing all calculations, whether her claim is valid. (6)

[32]

TOTAL: 150

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ADDENDUM

This addendum consists of 5 pages with 4 annexures.

ANNEXURE A

QUESTION 2.1

TABLE 1: TOTAL EXPENDITURE BY NATIONAL DEPARTMENTS IN 2019/20 FINANCIAL YEAR.

	Compensation of employees R (in billions)	Purchasing of goods and services R (in billions)	Capital spending R (in billions)	Current transfers and subsidies R (in billions)	Interest payment R (in billions)	Total R (in billions)
Basic education	204,4	26,2	12,0	19,7	0	**262,3**
Post-school education and training	11,5	2,2	6,5	92,4	0	**112,6**
Arts, culture, sports and recreation	4,1	3,5	1,5	2,3	0	**11,4**
Health	140,8	64,7	11,1	6,1	0	**222,7**
Social protection	14,7	8,3	0,8	183,2	0	**207**
Social security funds	4,6	4,1	1,2	61,2	0,3	**71,4**
Community development	17,3	12,3	78,9	100,1	0	**208,6**
Industrialisation and exports	10,3	3,6	8,8	14,8	0	**37,5**
Agricultural and rural development	13,0	8,8	6,4	2,5	0	**30,7**
Job creation and labour affairs	3,5	10,5	0,8	8,4	0	**23,2**
Economic regulation and infrastructure	21,9	35,6	33,6	3,5	6,6	**101,2**
Innovation, science and technology	4,8	3,7	1,5	6,6	0	**16,6**
Defence and state security	26,4	12,0	1,3	10,3	0	**50,0**
Police services	79,8	19,4	3,6	1,3	0	**104,1**
Law courts and prisons	33,9	12,0	2,0	0,4	0	**48,3**
Home affairs	4,7	2,9	0,7	0,2	0	**8,5**
Executive and legislative organisations	7,9	5,3	0,3	2,6	0	**16,1**
Public administration and fiscal affairs	20,8	13,6	1,8	5,4	0	**41,6**
External affairs	2,9	2,3	0,5	1,8	0,1	**7,6**
Contingency reserve						**13,0**
Total	**627,3**	**251,0**	**173,3**	**522,8**	**7,0**	**1 581,4**

[Source:www.treasury.gov.za]

ANNEXURE B

QUESTION 4.1

TAX CERTIFICATE FOR THE TAX YEAR 2021/2022

EMPLOYEE INCOME TAX CERTIFICATE INFORMATION

YEAR OF ASSESSMENT: 2021/2022

NAME OF CERTIFICATE: IRP5

EMPLOYEE INFORMATION

EMPLOYEE NUMBER: 81039755

INCOME TAX NO: 0181632159

CELL: 0782727288

BUS TEL: 012 404 4612

SURNAME: JONES

DATE OF BIRTH 19/07/1979

ID NUMBER: 7907190589088

NAMES: DANIEL

EMPLOYEE ADRESS

STREET NO: 1145 BLOCK U, SOSHANGUVE

TOWN: PRETORIA

EMPLOYER DETAILS

DEPARTMENT OF EDUCATION

INCOME RECEIVED

R 463 277 BASIC INCOME

R 38 224 EXTRA INCOME

INCOME RECEIVED CONTINUE

GROSS EMPLOYEE INCOME

R 501 501

DEDUCTIONS

R 34 745,78

TOTAL DEDUCTIONS

R 34 745,78

GROSS EMPLOYEE INCOME (TAXABLE)

R 466 755,22

TAX CREDITS, EMPLOYER/EMPLOYEE CONTRIBUTION

SITE

R0

PAYE

R 86 154,12

EMPLOYER AND EMPLOYEE UIF CONTRIBUTION

R0

TOTAL TAX

R **B**

MEDICAL TAX CREDIT

R 8 640,00

R0

[Adapted from actual tax document]

ANNEXURE C

QUESTION 4.1.3

TABLES 5 and 6: TAX TABLE AND TAX REBATES FOR THE 2021/2022 TAX YEAR.

TABLE 5: 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

TABLE 6: TAX REBATES AND MEDICAL TAX CREDITS FOR 2021/22 TAX YEAR

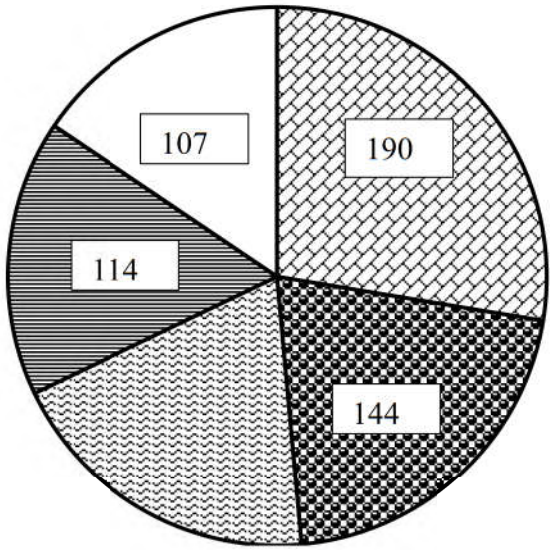
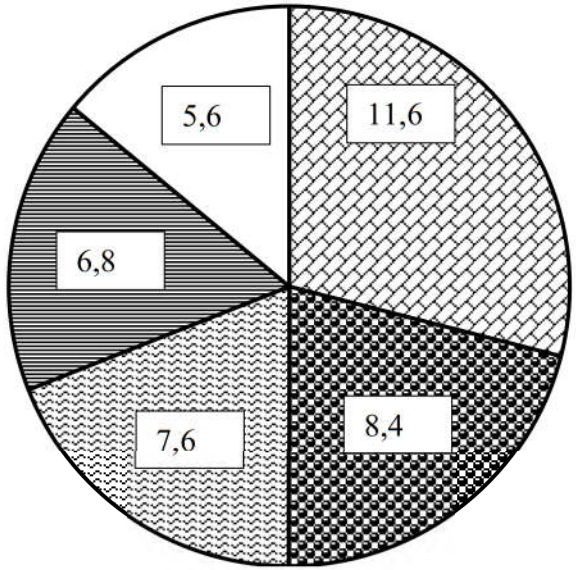
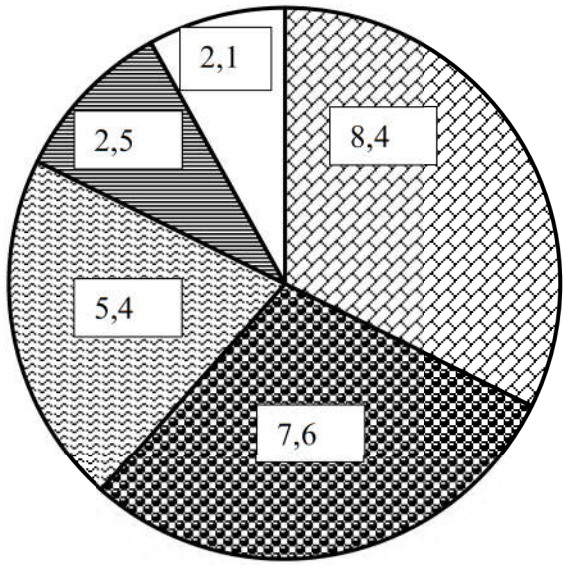
TAX REBATES	
Primary	R15 714
Secondary (65 and older)	R8 613
Tertiary (75 and older)	R2 871

[Source: www.statssa.gov.za]

ANNEXURE D

QUESTION 5.1

NET WORTH (IN BILLION DOLLARS) OF THE TOP FIVE RICHEST PERSONS IN THE WORLD, AFRICA AND SOUTH AFRICA

WORLD	AFRICA	SOUTH AFRICA
		
TOTAL NET WORTH **$688 billion**	**TOTAL NET WORTH** **$40 billion**	**TOTAL NET WORTH** **$26 billion**