



**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2022

MATHEMATICAL LITERACY P1

MARKS: 150

TIME: 3 hours

This question paper consists of 15 pages, an answer sheet and an addendum with 3 annexures.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE questions. Answer ALL the questions.
2. 2.1 Use the ANNEXURES in the ADDENDUM to answer the following questions:

ANNEXURE A for QUESTION 1.3
ANNEXURE B for QUESTION 3.1
ANNEXURE C for QUESTION 5.2

2.2 Answer QUESTION 3.1.5 on the attached ANSWER SHEET.

2.3 Write your NAME and GRADE 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. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.
10. Write neatly and legibly.

QUESTION 1

- 1.1 To determine the price of petrol per litre in South Africa, the current petrol pricing model uses the four main components shown in the TABLE 1 below.

TABLE 1: FOUR COMPONENTS DETERMINING THE PRICE OF PETROL PER LITRE

COMPONENTS OF THE PETROL PRICING MODEL	NOVEMBER PRICE FOR 2011	PERCENTAGE (%) INCREASE OF PETROL	NOVEMBER PRICE FOR 2021
Basic petrol price	R6,29	49	R9,37
Other levies	R1,91	114	R4,09
Road accident fund	R0,80	173	R2,18
Petrol levy	R1,78	116	R3,83

	NOVEMBER PRICE FOR 2011		NOVEMBER PRICE FOR 2021
Rand per litre of petrol	R10,77	80,78	R19,47

[Data courtesy of the Automobile Association: IOL. Motoring/2021]

Use TABLE 1 to answer the questions that follow.

- 1.1.1 Show how the price of R19,47 per litre of petrol in November 2021 was determined. (2)
- 1.1.2 Write down the percentage increase of the least price determining component of the price per litre of petrol. (2)
- 1.1.3 Show how the basic petrol price component in November 2021 was determined using the basic petrol price of 2011. (3)

- 1.2 Jane has a cellphone on a prepaid arrangement with a network that provides 1 gigabyte (GB) of data at a cost of R149,00.

NOTE: 1 GB = 1 000 MB (megabytes)

1 MB = 1 000 KB (kilobytes)

TABLE 2 below shows a list of cellphone applications Jane updated in the month of May 2022.

TABLE 2: CELLPHONE APPLICATIONS UPDATED IN MAY 2022

APPLICATIONS UPDATED	DATA USED TO UPDATE (in MB)
Google Drive	27,45
Dropbox	90
Facebook	---
Messages	43
YouTube	125
TOTAL DATA	400,45

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

- 1.2.1 Determine the data used for updating Facebook. (2)
- 1.2.2 Calculate the total cost of the data used in updating the above five (5) cellphone applications. (3)
- 1.2.3 Calculate the data balance in kilobytes remaining after updating all the cellphone applications in May 2022. (3)

- 1.3 ANNEXURE A shows an income and expenditure statement for Buzingo Private School.

The statement shows a comparison of budgeted and actual values for the year 2020.

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

- 1.3.1 Calculate the total actual income for the school in 2020. (2)
- 1.3.2 The value of the actual net income in 2020 is indicated as negative. What does *negative value* mean? (2)
- 1.3.3 Identify ONE item within the 'Income' which could have been the main cause for the school to have a negative value. (2)

- 1.4 TABLE 3 below shows the provincial results in Mathematical Literacy in the National Senior Certificate (NSC) Examinations in 2021. A candidate must achieve 30% or above to pass.

TABLE 3: SHOWING PROVINCIAL RESULTS IN MATHEMATICAL LITERACY IN 2021

PROVINCE NAME	TOTAL WROTE	% ACHIEVED AT 30% AND ABOVE
Eastern Cape	46 960	72,3
Free State	21 450	85,8
Gauteng	87 381	82,6
KwaZulu-Natal	105 651	68,6
Limpopo	59 560	67,2
Mpumalanga	37 857	71,5
North West	30 125	77,6
Northern Cape	9 813	71,3
Western Cape	42 270	80,4
National (RSA)	-----	74,5

[Source: [https://education.gov.za/release of NSC results 2021](https://education.gov.za/release%20of%20NSC%20results%202021)]

NOTE:

- Pass is 30% and more
- Fail is any mark below 30%



Use TABLE 3 to answer the questions that follow.

- 1.4.1 Determine the total number of candidates who wrote Mathematical Literacy in 2021, in the Republic of South Africa. (2)
- 1.4.2 Determine the number of provinces that performed poorer than the national score in 2021 in terms of an achievement of 30% and above. (2)
- 1.4.3 Calculate the number of candidates who passed Mathematical Literacy in the Eastern Cape in 2021. (3)
- 1.4.4 Determine the probability of randomly selecting a candidate that failed Mathematical Literacy in 2021, from those that wrote the subject in the Northern Cape. (2)

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QUESTION 2

- 2.1 The cost price of a CASIO and a SHARP calculator was advertised by a local store on its website on 13/2/2022 as shown below.

# PRICES ON CALCULATORS REDUCED. MAKE A SAVING!	
Brand: Casio Calculator	Brand: Sharp Scientific Calculator EL-531
 <p>SAVE</p> <p>Was R300,00</p> <p>Save R101,00</p> <p>R199,00</p>	 <p>SAVE</p> <p>Was R190,00</p> <p>Save R40,00</p> <p>R150,00</p>
Sale offers valid from 14/2/2022–28/2/2022	
[Adapted from game.co.za/feb2022]	

Use the above advertisement to answer the questions that follow.

- 2.1.1 Determine for the Sharp calculator the ratio of the saving amount to the original price in the form of **1 : ...** (2)
- 2.1.2 Express as a percentage (up to two decimal places) the discount amount on the price of the Casio calculator. (2)
- 2.1.3 Grade 12 learners from Tusso High School bought 8 Casio and 12 Sharp calculators on 28th February 2022. Calculate the total saving on the purchase. (3)
- 2.2 The current Grade 10 learners at Tusso High School plan to have a matric farewell in 2024. They budgeted that they would use R5 500.
- They fundraised R4 500 which they invested in a saving scheme that gives an interest of 9,5% per annum compounded annually.
- Verify, showing ALL calculations whether the class's invested amount after a period of exactly 2 years will meet their budget. (5)

2.3

Ms Nande is a 53-year-old and earned a gross income of R39 486 per month during the 2021/2022 tax year.

A non-taxable monthly deduction of 7,5% was made from her salary and paid into her pension fund.

TABLE 4 below shows the tax table for the 2022 tax year ended 28 February 2022.

TABLE 4: TAX RATES FOR 2021/2022 TAX YEAR (1 Mar. 2021–28 Feb. 2022)

TAX BRACKET	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

[Adapted from www.sars.gov.za]

TABLE 5 below shows the tax rebates for the 2021/2022 tax year.

TABLE 5: TAX REBATES FOR THE 2021/2022 TAX YEAR

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

[Adapted from www.sars.gov.za]

Use TABLE 4 and TABLE 5 above to answer the questions that follow.

2.3.1 Explain the term ‘*gross income*’ in this context. (2)

2.3.2 Show by calculation that a person who was 75 years and older, and earned R151 100 during the 2022 tax year, paid no tax. (5)

2.3.3 Calculate Ms Nande’s annual tax payable. (8)

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QUESTION 3

3.1 In South Africa many people are suffering from chronic health conditions.

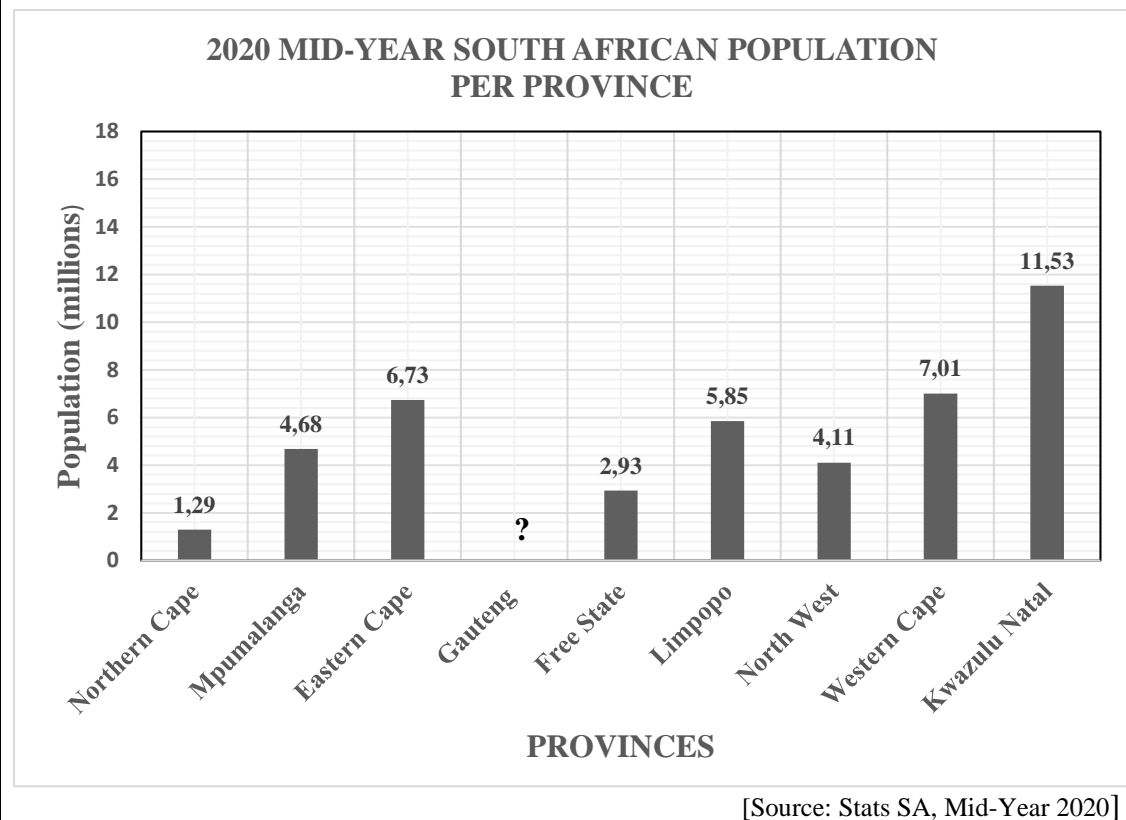
Population estimation in thousands ('000) in 2020 mid-year for the people with chronic health conditions is given in a table on ANNEXURE B.

NOTE: Chronic health condition(s) require one to have ongoing medical attention or take medicine on a daily or regular period as per a medical doctor's prescription.

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

- 3.1.1 Calculate the total number of males with chronic health conditions in KwaZulu-Natal. (2)
- 3.1.2 Use the number of diabetic people to determine the provincial range among provinces in South Africa. (3)
- 3.1.3 Calculate the provincial mean number of people with hypertension (HBP) in South Africa. (3)
- 3.1.4 Determine the median of the total chronic health condition of various provinces in the RSA. (3)
- 3.1.5 Use the ANSWER SHEET to draw a line graph representing the total number of people suffering from diabetes from all provinces. (4)
- 3.1.6 Determine probability (as a percentage) of randomly selecting a diabetic female among chronic health suffering people in KwaZulu-Natal. (4)

- 3.2 The population of the Republic of South Africa during the mid-year of 2020 was estimated at 59,62 million. The graph below represents the population per province.



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

- 3.2.1 State the type of graph used to display the information. (2)
- 3.2.2 Determine the population of Gauteng and write final answer in words. (4)
- 3.2.3 Calculate the interquartile range (IQR) for the provincial populations for 2020 mid-year:

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

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QUESTION 4

4.1 Mr Buti and his daughter Jane use the same cellphone network provider but each use it under different conditions.

- **Mr Buti is on a contract where:**

- (i) he pays a fixed cost of R200 per month for 100 minutes free and
- (ii) there after a cost of R1,20 per minute, per second billing after the free 100 minutes.
- (iii) **Total costs (R) = 200 + (n - 100) × 1,20;** where n represents minutes used.

- Jane is on a **pre-paid** and pays R1,75 per minute, per second billing.

Mr Buti's call minutes and costs are shown in TABLE 6 below.

TABLE 6: SHOWING COST AND DURATION OF CALLS MR BUTI MADE PER MONTH ON THE CELLPHONE CONTRACT

Total number of call minutes for the month	0	50	100	200	300	D
Total Cost in Rands (R)	200	200	C	320	440	500

Use the information above and TABLE 6 to answer the questions that follow.

4.1.1 Calculate the value(s) of:

(a) **C** (2)

(b) **D** (3)

4.1.2 Explain the term '*prepaid*' in the context above. (2)

4.1.3 Calculate the cost Jane paid in a month she called for 200 minutes. (2)

4.2 Buti has an Eliti account with one of the banks in South Africa.

TABLE 7 shows deposit fees applicable on his account in 2022.

TABLE 7: ELITI ACCOUNT COSTS AT ABA BANK FOR DEPOSITS

TRANSACTION	COSTS
Notes and coin deposit	R80 + R2,25 per R100 (for notes) + R5 per R100 (for coins) or part thereof the amount deposited.

[Adapted by examiner from information supplied by various banks – 2022]

Use the information from TABLE 7 to answer the questions that follow.

4.2.1 Determine the minimum amount one will pay when making a deposit of notes and coins. (2)

4.2.2 Buti says he will be charged R180 when making a deposit of notes to the value of R1 500 and R500 in coins. Show by means of calculations whether his statement is VALID. (5)

4.2.3 Mr Buti deposited R1 500 an amount from sale of goods that were sold at a Value Added Tax (VAT) inclusive price.

Calculate the VAT amount on goods sold. (You may use VAT = 15%) (3)

4.2.4 Name at least ONE method Buti can use to send money to a person who does not have a bank account. (2)

4.3 A tourist from Japan arrived in East London on 26th March 2022, to tour some parts of the Eastern Cape for a period of 5 days. He planned to use an average amount of R4 042,19 per day.

The tourist's first tour was a return trip from East London to Humansdorp. The conditions were as follows:

- The tourist paid for his petrol use on a rented car.
- The rented car is given with full tank and must be returned with a full tank.
- Car rental fee rate is 182 cents per kilometre.

Furthermore, the following details are known.

- The distance from East London to Humansdorp is 368,6 km.
- The cost of petrol was R19,89 per litre at the time.

The tourist opted for a Toyota Corolla 1.6 that uses **7 litres/100 km** on average.

Use the information above to answer the questions that follow.

4.3.1 Calculate the total Japanese Yen he exchanged for the 5 days use. If the exchange rates between RSA Rand and Japanese Yen on the day is given as in table below:

SOUTH AFRICAN RAND (ZAR)	JAPANESE YEN (¥)
5	37,51715

[Adapted from Currency Data API/26/03/2022] (4)

4.3.2 Calculate the rental fee for the return trip between East London and Humansdorp, excluding petrol used. (3)

4.3.3 Calculate the cost of petrol for the return trip above. (4)

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QUESTION 5

5.1 TABLE 9 below shows the cost of movie tickets at Gompo Mall in 2021 and 2022.

TABLE 9: COST OF MOVIE TICKETS AT GOMPO MALL IN EAST LONDON

STANDARD PRICING (2D)		
CATEGORY (AGE OF MOVIE ATTENDEES)	2021 Ticket cost	2022 Ticket cost
Children under 18	R40	R60
Adults (above 18 less than 65)	R45	R65
Pensioners (65 and above)	R40	R60

- In May 2021, ticket sold were 60% of May 2022 sales.
- 930 movie tickets were sold in May 2022.
- On the average number of tickets sold in May 2021 and May 2022 were in the ratio: **Adults : Children : Pensioners = 2 : 3 : 1**

[Adapted from hemingways.co.za]

Use TABLE 9 and the information above to answer the questions that follow.

5.1.1 Determine the number of tickets bought by children under 18 in May 2022. (2)

5.1.2 Determine the amount received from tickets bought by adults in May 2021. (3)

5.2 ANNEXURE C shows pie charts about tourists from other countries to South Africa in the years 2019 and 2020.

Use ANNEXURE C to answer the questions that follow.

5.2.1 Name another type of graph you can use to display the information in ANNEXURE C. (2)

5.2.2 Identify the country that had the least number of visitors in 2020. (2)

5.2.3 Inako said that 435 582 tourists came from the UK in 2019. Verify, showing ALL calculations, whether his statement is CORRECT. (6)

5.2.4 Determine the probability (as a decimal) of randomly selecting a tourist from a country that showed neither decrease or an increase in the number of visitors. (3)

5.2.5 Give ONE possible reason why there was a decrease in the number of tourists from other countries to South Africa in 2020 compared to 2019. (2)

- 5.3 Mr Jabu lives in Komani, in the Enoch Mgijima Municipality and uses prepaid electricity that is sold to customers at a VAT inclusive rate.

TABLE 10 below shows the cost of prepaid units of electricity.

TABLE 10: COST OF PREPAID UNITS OF ELECTRICITY

BLOCK	UNITS (kWh)	RATE c/kWh (INCLUDING VAT)
1	0 – 50	144,72
2	51 – 350	186,06
3	351 – 600	261,87
4	> 600	308,37

[Source: https://www.enochmgijima.org.za/electricity_tariffs2021/2022]

- * **Prepaid electricity:** Paying for electricity before using it.
- * VAT (Value Added Tax) = 15%
- * The municipality buys electricity from Eskom at an average VAT inclusive price of R1,33 per kWh.

Use TABLE 10 above to answer the questions that follow.

- 5.3.1 State any TWO reasons why it is an advantage for the municipality to sell prepaid electricity. (2)
- 5.3.2 Determine the number of units Mr Jabu received when he bought prepaid electricity for R68,02. (3)
- 5.3.3 Mr Jabu stated that the percentage profit the municipality makes when a customer buys 290 kWh of electricity is more than 34%.

Verify, by showing ALL calculations, if his claim is VALID.

You may use the formula:

$$\% \text{ Profit} = \frac{\text{selling price for the units} - \text{cost price for the units}}{\text{cost price for the units}} \times 100\% \quad (6)$$

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TOTAL: 150

ANSWER SHEET

NAME OF LEARNER:

GRADE:

QUESTION 3.1.5

