basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

EXEMPLAR 2025

MARKS: 150

TIME: 3 hours

This question paper consists of 13 pages and a 19-page SPECIAL ANSWER BOOK.

INSTRUCTIONS AND INFORMATION
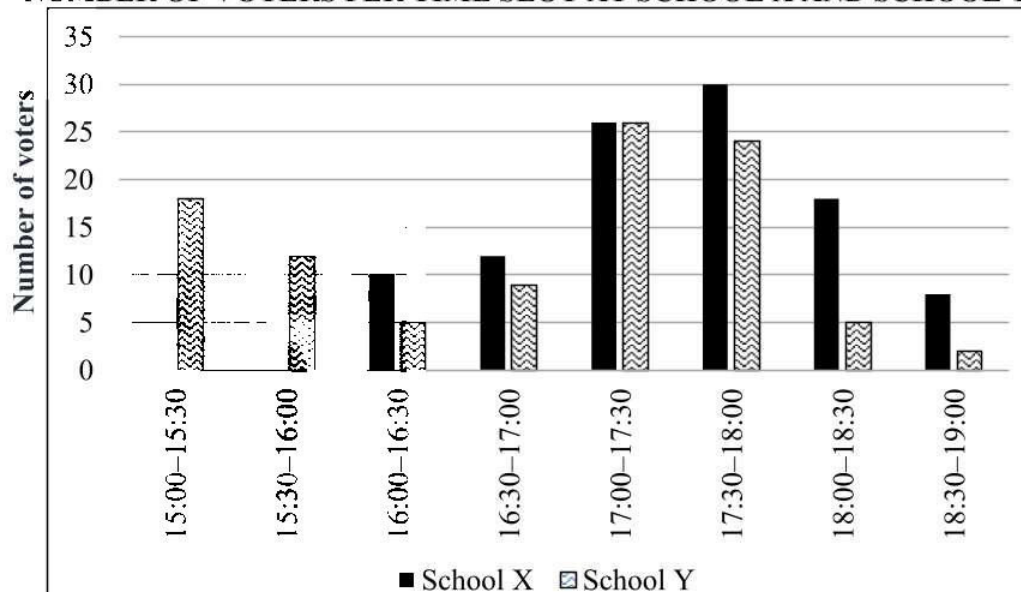
1.   This question paper consists of FIVE questions.

2.   Answer ALL the questions in the SPECIAL ANSWER BOOK provided.

3.   You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

4.   Show ALL calculations clearly.

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

6.   Indicate units of measurement, where applicable.

7.   Diagrams are NOT necessarily drawn to scale, unless stated otherwise.

8.   Write neatly and legibly.

QUESTION 1

1.1   School X and School Y conducted an election for new members to serve on the school governing body (SGB). The graph below shows the number of voters voting during different time slots at School X and School Y.

NUMBER OF VOTERS PER TIME SLOT AT SCHOOL X AND SCHOOL Y

[Adapted from SGB elections, 2024]

Use the information above to answer the questions that follow.

1.1.1   Write down the number of voters at School Y from 16:00–16:30.   (2)

1.1.2   Identify the time slot when 30 people voted at School X.   (2)

1.1.3   Choose the statement (A–C) below that BEST describes the trend of the voters at School Y.

    A   As time went by, the voter numbers increased to a maximum and then decreased.

    B   The voter numbers started high, then decreased and then picked up again.

    C   The number of voters decreased, then increased and finally decreased with time.   (2)

1.1.4   The probability of randomly selecting a voter from School X is 0,56 during the 17:30–18:00 time slot.

Write 0,56 as a simplified fraction.   (2)

1.1.5   Calculate the total number of voters at both schools who voted during the 17:00–17:30 time slot.   (3)

1.2 The newly elected SGB planned to have lunch with the staff.

TABLE 1 below shows the average comparative food prices for May 2022 and May 2023 needed for some of the lunch items.

TABLE 1: COMPARATIVE FOOD PRICES FOR SOME LUNCH ITEMS

FOOD ITEMS	PRICE IN RAND		PERCENTAGE CHANGE	
	MAY 2022	MAY 2023	YEAR ON YEAR	MONTH ON MONTH
410 g beans	12,60	15,14	20,2	0,5
250 g instant coffee	45,56	48,47	6,4	−1,0
Eggs 1,5 dozen tray	52,97	57,33	8,2	1,6
750 mℓ sunflower oil	40,68	35,52	−12,7	−2,3
Oranges per kg	22,07	20,10	−8,9	−14,5
Chicken giblets per kg	37,73	46,75	23,9	2,2
Chicken portions per 2 kg	86,80	93,06	7,2	0,6
TOTAL	A	R316,37		

[Adapted from www.statsa.gov.za]

Use TABLE 1 above to answer the questions that follow.

1.2.1 Identify the food items that showed a decrease in both the month-on-month and year-on-year percentage change. (3)

1.2.2 Determine the missing value, **A**. (2)

1.2.3 Calculate the price of a dozen eggs during May 2022. (2)

1.2.4 Write down the unit ratio, in the form **1 : …**, for the price of the oranges in May 2022 to the price of the oranges in May 2023. (3)

1.3   TABLE 2 below gives definitions of terminology used in Mathematical Literacy.

TABLE 2: TERMINOLOGY USED IN MATHEMATICAL LITERACY

LETTER	DEFINITION
A	An increase in the price of a basket of goods or services over time that is representative of the economy as a whole
B	Sum of all the values divided by the number of values
C	The income received from the item sold and the cost price of the item is the same
D	Value or values appearing most often in a data set
E	The difference between the highest and lowest values in a data set
F	An amount paid regularly at a particular rate for the use/loan of money
G	These are amounts that must be paid every month and which stay the same, like rent, school fees and transport costs
H	Middle value in an ordered data set
I	Expenses that change over time or from one week/month to the next, e.g. telephone and electricity costs
J	The point where the income exceeds the expenses

Use TABLE 2 above and match the definitions with the terminology below. Write only the letter (A–J) next to the question numbers (1.3.1 to 1.3.4), e.g. 1.3.5 K.

1.3.1   Break-even point   (2)

1.3.2   Inflation   (2)

1.3.3   Variable expenses   (2)

1.3.4   Mean   (2)
[29]

QUESTION 2

2.1   Miecke purchased prepaid electricity and received the following till slip.
Note that some information has been omitted.

```
         TAX INVOICE VAT NO. 4420106777
            *** PREPAID ELECTRICITY ***
            Electricity Municipal Prepaid
         VAT REGISTRATION NO. 4370102313
              Meter: 07032985769

            DOMESTIC HOUSEHOLD TARIFF

         Transaction Sequence No.: 56332515

    Amount                    R1 300,00
    Units                     *** kWh

    Electricity               R1 130,43
    VAT 15%                         B
                         -----------------------
    TOTAL                     R1 300,00
                         -----------------------
```

[Adapted from original till slip]

Use the information above to answer the questions that follow.

2.1.1   Write down the meter number.   (2)

2.1.2   Determine the missing value, **B**.   (3)

2.1.3   A partial residential electricity tariff table (excluding VAT) is shown below.

TABLE 3: RESIDENTIAL ELECTRICITY TARIFF

BLOCK	CONSUMPTION (kWh)	TARIFF (R/kWh)
Block 1	0–350	2,19
Block 2	More than 350	2,91

Determine the number of kWh units Miecke purchased.   (7)

2.2   Miecke plans to install a home solar system unit consisting of solar panels, a battery and an inverter. She sees the advertisement below in a community newspaper showing the two different payment options for the same unit.

HOME SOLAR SYSTEM UNIT PAYMENT OPTIONS	
OPTION 1: RENT-TO-OWN	**OPTION 2: CASH PRICE**
Pay for 7 years at R1 549 p/m Additional costs: R782 initiation fee Buy-out after rental period R7 820	R78 200 (incl. VAT)

[Adapted from https://solar.alumo.co.za]

Use the information above to answer the questions that follow.

2.2.1   Write down the monthly instalment for the rent-to-own option.   (2)

2.2.2   Calculate, excluding VAT, the cash price of the home solar system unit.   (3)

2.2.3   After seven years, Miecke decides to buy-out the rent-to-own option.

Calculate the extra amount she has to pay compared to buying the home solar system unit for cash.   (5)

2.3   Miecke is 45 years old and earns a monthly taxable income of R39 275,85 in the 2023/2024 tax year. She does not belong to a medical aid.

ANNEXURE A in the ANSWER BOOK shows the annual tax table for individuals for the 2023/2024 tax year.

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

2.3.1   Identify the tax bracket that Miecke will use to calculate her income tax payable.   (3)

2.3.2   Calculate Miecke's annual tax payable for the 2023/2024 tax year.   (5)
   [30]

QUESTION 3

3.1 | ANNEXURE B in the ANSWER BOOK shows two graphs. GRAPH 1 shows the trends in the total number of Shoprite and Pick n Pay stores for the period 2014 to 2023. GRAPH 2 shows the trends in the total number of employees in these two stores for the period 2005 to 2023. |

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

3.1.1   Identify the year in which there was a decrease in the number of employees in the Pick n Pay stores for the first time.   (2)

3.1.2   It is projected that the number of Pick n Pay stores will increase by 95,39% from 2023 to 2032.

Determine, by means of calculations, the projected number of Pick n Pay stores in 2032.   (3)

3.1.3   An analyst stated that Shoprite employed more employees per store than Pick n Pay during 2023.

Verify, showing ALL calculations, whether the analyst's statement is valid.   (6)

3.1.4   Determine, as a percentage, the probability of randomly selecting a year where the number of Shoprite stores is fewer than 2 000.   (3)

3.2 | A study relating to the amount of time spent (in minutes) by a selected number of customers in a store was conducted on a particular Saturday. On that Saturday, a total of 12 342 customers visited the store.

12	15	25	25	40	28	18	23
43	15	22	19	15	8	37	9
24	23	15	67	25	29	6	17
15	43	23	27	33	26	127	10

Use the information above to answer the questions that follow.

3.2.1 Write down the number of customers that represent the sample size and the number of customers that represent the population size for this study. (3)
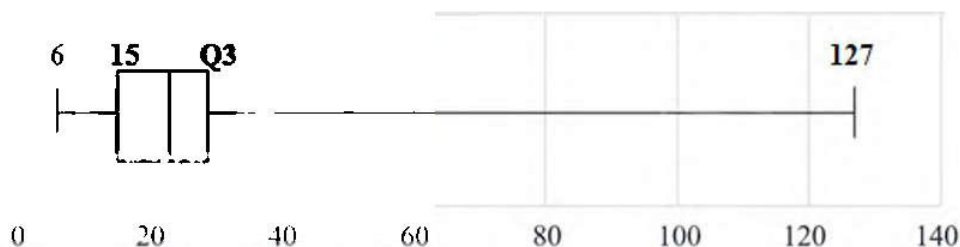
3.2.2 Choose the correct option (**A**, **B**, **C**, **D** or **E**) that represents the stage in the data handling process that uses the measures of central tendency and spread.

   A   Collecting data
   B   Classifying and organising data
   C   Summarising data
   D   Representing data
   E   Analysing data (2)

3.2.3 Give a reason why the value of 127 is considered to be an outlier in the data set. (2)

3.2.4 Shown below, in rank order, is selected data of the time spent by customers in the store and an incomplete box-and-whisker plot of the same data.

6	8	9	10	12	15	15	15	15	15	17
18	19	22	23	23	23	24	25	25	25	26
27	28	29	33	37	40	43	43	67	127	

Use the information above to answer the questions that follow.

(a)   Calculate the value of the upper quartile (Q3). (3)

(b)   Vuyo stated that if the outlier value was removed from the data set, the new interquartile (IQR) value would be 13.

   Verify Vuyo's statement, showing ALL calculations. (5)

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QUESTION 4

4.1 Lee's parents plan to celebrate his 21st birthday. This special event will be held at a popular hotel, starting at 18:00.

TABLE 4 below shows some of the budgeted expenses for the party.

TABLE 4: BUDGETED EXPENSES FOR THE PARTY

Cost of the venue	R750 deposit and R6 185 for the day
Food and drinks	R18 000
Birthday cake	R1 250
OPTIONS FOR DISC JOCKEYS (DJs)	
DJ Rain	R4 000 for 5 hours or less. Thereafter the tariff is an additional R1 250 per hour.
DJ 5-Star	R1 000 per hour or part thereof
DJ Cool	R6 000 for the party

[Adapted from www.bloemshowgrounds.co.za>venues & bark.com]

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

4.1.1 The table below represents the cost to hire DJ Rain.

TABLE 5: COST TO HIRE DJ RAIN PER HOUR

Number of hours	1	2	3	4	5	6	7	8	9
Cost (in R)	4 000	4 000	P	4 000	4 000	Q	6 500	7 750	R

(a) Write a formula to calculate the cost to hire DJ Rain for more than 5 hours in the following form:

Cost = … (3)

(b) Complete the table by calculating the missing values **P**, **Q** and **R**. (4)

4.1.2 The graphs showing the costs to hire DJ 5-Star and DJ Cool are shown on the ANSWER SHEET.

(a) Name the type of graph used to represent the cost to hire DJ 5-Star. (2)

(b) Use TABLE 5, showing the cost to hire DJ Rain for up to 9 hours, to draw a line graph on the same grid in the ANSWER BOOK. (4)

4.1.3 Lee's parents decide to hire DJ 5-Star for the 21st birthday party. DJ 5-Star will provide the music entertainment from 18:00 until 01:30.

Determine the total budgeted expenses for the party. (5)

4.1.4 Give ONE reason why Lee's parents did not choose DJ Cool. (2)

4.2 | The hotel has three other smaller venues, each accommodating a maximum number of guests per function, as listed below:

Cinema-style venue   400 guests
Sit-down venue without dancing space   250 guests
Sit-down venue with dancing space   200 guests

TABLE 6 shows the number of guests accommodated for functions at the three venues during a specific month in 2022 and 2023.

TABLE 6: ACTUAL NUMBER OF GUESTS PER FUNCTION

YEAR	NUMBER OF GUESTS							
2023	180	350	400	200	215	90	150	230	160
2022	360	160	300	70	160	200	240		

[Adapted from www.bloemshowgrounds.co.za>venues]

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

4.2.1   Write, as a decimal, the probability that a cinema-style venue was chosen as a suitable function venue for all the functions held during 2022 and 2023.   (3)

4.2.2   Determine the median number of guests accommodated during 2023.   (3)

4.2.3   The manager stated that the range of the number of guests per function during 2022, is the same as the range of the number of guests per function during 2023.

        Verify, showing ALL calculations, whether his statement is valid.   (5)

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QUESTION 5

5.1 | The pie charts on ANNEXURE C in the ANSWER BOOK show the Indian Union budgets for income and expenditure for 2023/2024. Some values have been omitted.
The currency used in India is the rupee. India also has different denominations for the larger currency amounts.

NOTE: 100 000 rupees = 1 lakh
100 lakhs   = 1 crore

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

5.1.1 Choose the correct word from those given in brackets. Write down only the word next to the question number (5.1.1).

A budget is a (deficit/surplus/balanced) budget when the income is less than the expenditure. (2)

5.1.2 General sales tax (GST) is a tax that is similar to VAT in South Africa.

Calculate the missing percentage for GST on the pie chart. (3)

5.1.3 Calculate, in lakh crores, the amount spent on defence in India. (3)

5.1.4 List THREE sources of income shown on the pie chart where the total percentages add up to the borrowing percentage value. (3)

5.1.5 Sanji calculated, in lakh crores, the amount spent on interest payments. He rounded off his answer to the nearest whole number.

Sanji stated that the rounded answer he calculated did not make much difference in rupees when compared to the non-rounded answer.

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

5.2 | In 2024, South Africa received R302,4 billion from corporate income tax.

NOTE: R1 000 000   = 4 447 989,1 rupees
4 447 989,1 rupees = 44,479891 lakhs

[Adapted from www.wise.com/, 10 June 2024]

5.2.1 Convert R302,4 billion to million rands. (2)

5.2.2 Hence, convert the South African corporate income tax to lakh crore. (4)

5.3
> A house in Chennai, India, is valued at 5 000 000 rupees at the end of 2024.
>
> TABLE 7 shows the inflation rates in India for house prices for the last five years.
>
> **TABLE 7: INFLATION RATES IN INDIA FOR THE LAST FIVE YEARS**
>
> | YEAR | INFLATION RATE |
> |------|----------------|
> | 2024 | 8% |
> | 2023 | 7,5% |
> | 2022 | 7% |
> | 2021 | 6,5% |
> | 2020 | 6% |
>
> [Adapted from hewire.in/economy/the-truth-about-inflation-in-india-and-around-the-world]

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

5.3.1   Describe the trend in the inflation rates in India. (2)

5.3.2   Calculate how much the house was worth at the end of 2022. (6)

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TOTAL: 150