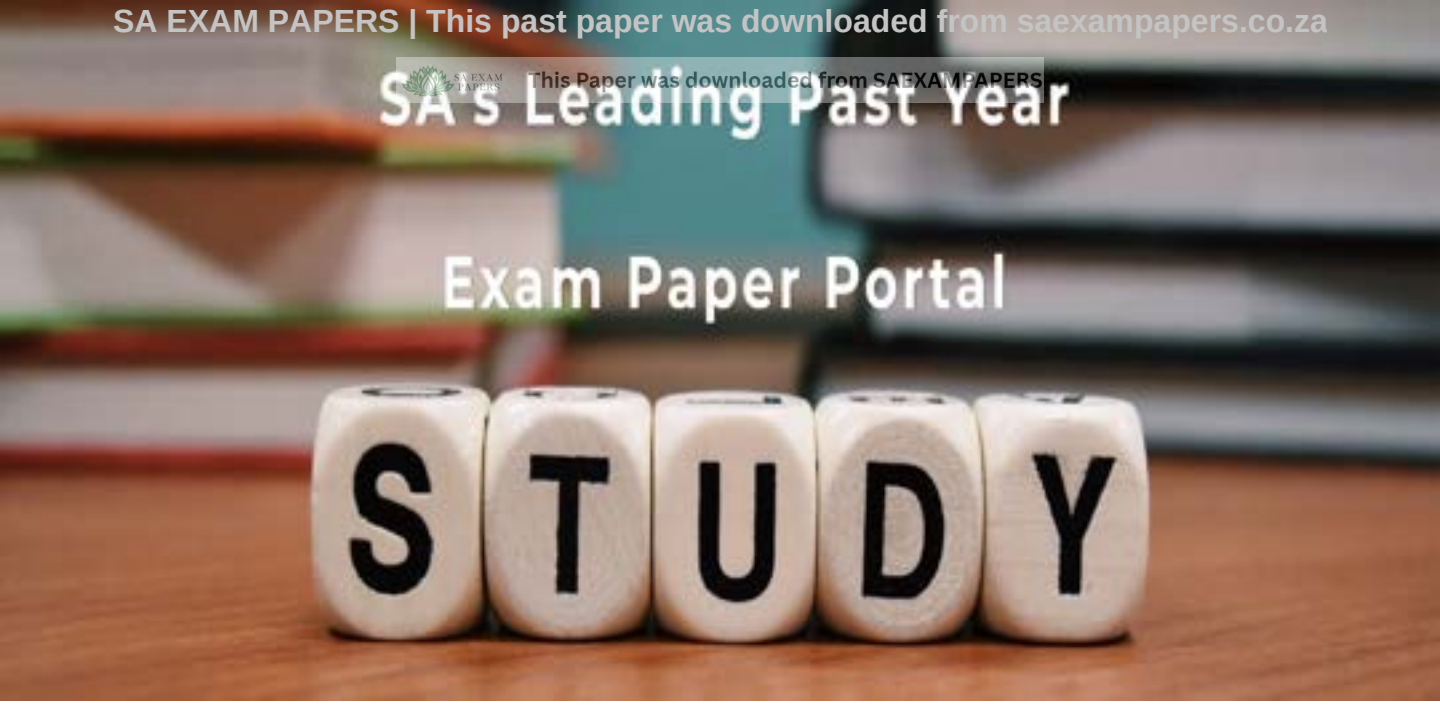


education

Department of
Education
FREE STATE PROVINCE

PREPARATORY EXAMINATION

GRADE 12

MATHEMATICAL LITERACY P1

SEPTEMBER 2025

MARKS: 150

TIME: 3 HOURS

This question paper consists of 10 pages and a 22-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. Write your SURNAME and NAME on the space provided. ONE letter per block.
4. You may use an approved calculator (non-programmable and non-graphical) unless stated otherwise.
5. Show ALL calculations clearly.
6. Round off ALL final answers appropriately according to the given context, unless stated otherwise.
7. Indicate units of measurement, where applicable.
8. Diagrams are NOT necessarily drawn to scale unless stated otherwise.
9. Write neatly and legibly.

QUESTION 1

1.1 TABLE 1 below contains a list of explanations, abbreviations and definitions of concepts frequently used in Mathematical Literacy.

TABLE 1: EXPLANATIONS AND DEFINITIONS OF CONCEPTS OR ABBREVIATIONS

A	The difference between the largest and smallest value in the data set.
B	A situation in finance where expenses exceed the money coming into a business.
C	Explains how wide the values are that reside in the middle (i.e. from 25% to 75%) of scores in a data set, excluding the top and bottom quarter.
D	The point at which the profit from the transactions is zero and the total sales are equal to the total costs is called the equilibrium point.
E	Where an event is impossible to happen, its chance is 100%.
F	The chance of an event happening.
G	The costs that do not change with the quantity produced and remain constant.
H	The cost (in rands) per measuring unit for a specific service.

Use TABLE 1 above to write down the letter of the explanation or definition (A to H) of EACH of the following concepts, for example: 1.1.6 **C**.

1.1.1 Probability (2)

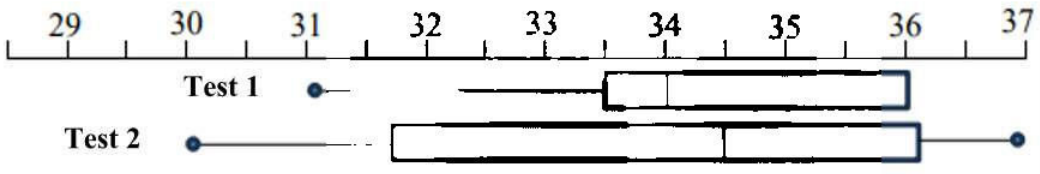
1.1.2 Breakeven point (2)

1.1.3 Inter Quartile Range (IQR) (2)

1.1.4 Deficit (2)

1.1.5 Tariff (2)

1.2 The graphs below analyse the results of TWO tests, Test 1 and Test 2, written by a group of learners in a class.



Note: Each test is out of a total of 50 marks.

Use the information above to answer the questions that follow.

1.2.1 State whether the graph representing the test results above is a **line graph** or a **box and whisker plot**. (2)

1.2.2 Write down the maximum marks obtained in Test 1. (2)

1.2.3 Calculate the difference between the minimum marks for Test 1 and Test 2. (2)

1.2.4 Show that the quartile 1 mark for Test 1 equals 37% of the total test mark. (2)

1.3 An expert presented several workshops around Mangaung and one at the Bon Hotel. He received an invoice from BON Hotel in Bloemfontein for his seven-night accommodation and ONE-day conference at the hotel.

INVOICE

BON HOTEL BLOEMFONTEIN CENTRAL

DESCRIPTION	UNIT PRICE	TOTAL
Rental of a room and breakfast for 7 nights, arriving after 14:00	R4 950,00 per night	**A**
Hire a conference hall and facilities	R750,00	R750,00
Conference set-up and refreshments	R1 045,00	R1 045,00
	Sub-total	R36 445,00
	VAT @ 15%	...
	TOTAL DUE:	...

[Adapted from www:eu-central1.amazonses.com]

Use the information above to answer the questions that follow.

1.3.1 What does the acronym VAT stand for? (2)

1.3.2 Determine the value of **A** in the invoice. (2)

1.3.3 Write down the VAT rate in the invoice above. (2)

1.3.4 Calculate the VAT amount due on this invoice. (3)

1.3.5 Write as a simplified ratio the price of conference set-up and refreshments to the sub-total. (3)

[30]

QUESTION 2

2.1 TABLE 2 on ANNEXURE A in the ANSWER BOOK shows the price of grocery items from SEVEN different grocery stores during March 2024.

Use ANEXURE A to answer the questions that follow.

2.1.1 Calculate the value of **B**. (2)

2.1.2 Determine the price of rice at the Spar. (3)

2.1.3 Identify the third-cheapest grocery store in March 2024. (2)

2.1.4 Give ONE possible reason why the price of the same item differs from one grocery store to another. (2)

2.1.5 Determine the probability (as a decimal) of randomly selecting non-food items from the grocery items. (2)

2.1.6 Write down the food item(s) that cost the same amount in four different grocery stores. (2)

2.1.7 Provide ONE possible reason why some customers prefer to purchase groceries at an expensive grocery store. (2)

2.2 A 55-year-old female deputy principal earns a monthly taxable income of R46 294,08; on her birthday month, she receives an extra income equal to her one-month taxable income.

TABLE 3 below, as issued by the South African Revenue Service (SARS), could be used to determine the tax amount payable by her.

TABLE 3: 2023/2024 TAX YEAR RATES (1 March 2023 to 29 February 2024)

BRACKET	TAXABLE INCOME (in Rands)	RATES OF TAX (in Rands)
1	R0–R237 100	18% of each R1 earned
2	R237 101–R370 500	R 42 678 + 26% of the amount above R237 100
3	R370 501–R512 800	R 77 362 + 31% of the amount above R370 500
4	R512 801–R673 000	R121 475 + 36% of the amount above R512 800

TAX REBATES 2023/2024

Primary (below 65)	R17 235
Secondary (65 and older)	R9 444
Tertiary (75 and older)	R3 145

NOTE:

- During the tax year, her salary was constant.
- SARS implement a pay-as-you-earn (PAYE) tax system.

Use the information above to answer the questions that follow.

2.2.1 Determine the following:

(a) The deputy principal's total annual taxable income. (2)

(b) The tax bracket that will be used to calculate her income tax. (2)

2.2.2 The deputy principal claims the monthly tax deduction of R11 357,36 on her salary is CORRECT.

Verify, showing all calculations, whether her claim is VALID. (7)

2.2.3 Give ONE advice to the deputy principal on how she can lower the amount of tax she has to pay. (2)

2.2.4 Provide ONE possible reason why the amount of tax a taxpayer has to pay is according to the level of their income (that is, pay as you earn). (2)

[30]

QUESTION 3

3.1 ANNEXURE B in the ANSWER BOOK shows the percentage of teenagers aged 14 to 19 years who were pregnant in South Africa (RSA) from 2018 to 2022.

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

3.1.1 State the estimated number of South Africa's female population for 2022 in words. (2)

3.1.2 Identify the type of graph used to represent the information. (2)

3.1.3 Write down TWO consecutive years where the combined annual teenage pregnancy rate was below 4% for the period as mentioned above. (2)

3.1.4 Determine the number of teenagers who were pregnant in 2022. (2)

3.1.5 Give ONE possible reason why:

(a) The birth registrations are more than 100% of the actual births that occurred in 2020. (2)

(b) The graph for teenagers aged 14 years in 2021 is not shown. (2)

3.1.6 Determine the actual number of births from non-teenage mothers in 2020. (4)

3.2 A teenage mother has a 33-month-old boy, weighing 15kg.

ANNEXURE C in the ANSWER BOOK shows a weight-for-age percentile graph for boys from birth to 36 months. The data for Child B is already plotted.

Use information from ANNEXURE C to answer the questions that follow.

3.2.1 Identify the type of graph used on ANNEXURE C. (2)

3.2.2 State the percentile curve on which the 33-month-old boy above will be located. (2)

3.2.3 A nurse explained the dot on the graph for child B to the mother, '*The dot on the 25th percentile curve reflects your son's weight position out of 100% of the boys his age.*'

What does the nurse's statement mean? (3)

3.2.4 In which quartile will Child B belong? (2)

3.2.5 Mention ONE function of this type of graph. (2)

3.2.6 Determine how far apart the percentile curve of another boy of the same age and weighing 32 lb from Child B will be. (3)

[30]

QUESTION 4

4.1 The measured weight in kilograms of learners in the three classes (Grade 4.1 to 4.3) at St Dominic's College are given below.

Grade 4.1

L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
44	56,6	48,8	50	51	52	53,7	54	56	56,1

Grade 4.2

L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
40	41	42	42,5	46	46	**C**	**C**	53	53

Grade 4.3

L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
62	60	57	56	55	54	53	**D**	48	47

Note:

- **L** = Learner
- The weights of Grade 4.3 learners are already arranged.

Use the information above to answer the questions that follow.

4.1.1 State whether the weight of the learners is regarded as discrete or continuous data. (2)

4.1.2 Write down the modal weight of Grade 4.1 learners. (2)

4.1.3 Determine:

(a) The median weight of learners in Grade 4.1. (3)

(b) The value of **C**, if the mean weight of Grade 4.2 is 44,35. (3)

4.1.4 Determine the lower quartile for Grade 4.3 if the Interquartile Range (IQR) for this class is 6,9.

You may use the formula:

IQR = Upper quartile – Lower quartile (3)

4.2 St. Dominic's College rents out photocopying machines and offers three contract options. The ANSWER SHEET on page 16 in the ANSWER BOOK displays the graphs for these three contract options.

Use the information on the ANSWER SHEET to answer the questions that follow.

4.2.1 Write down the number of copies at the point where contracts **1** and **3** cost the same. (2)

4.2.2 Point **B** to **C** represents a fixed cost. Explain the term **fixed cost** in this context. (2)

4.2.3 St Dominic's College makes 3 500 copies per month.

Identify the contract which will be the cheapest option for the college. (2)

4.2.4 Use the graph on the ANSWER SHEET to determine a formula that can be used to calculate the total cost (in rand) for contract **2** in the form:

Total Cost = ... (5)

4.2.5 SEBENZA Company charges a rate of R0,70 per copy for renting their photocopying machine without any other costs.

On the ANSWER SHEET, draw a line graph to show the costs charged by the SEBENZA Company. (3)

4.3 St Dominic's College invested R1 250 000 at a bank where it will earn an interest rate of 6%, compounded annually, for 2 ¼ years.

Determine through calculations whether this money will generate an interest of more than R180 000 by the end of the investment term. (9)

[36]

QUESTION 5

5.1 The ranking of the eleven top soccer players according to the money they earn in the DSTV soccer league and World soccer players for the 2023/24 season is shown on ANNEXURE D in the ANSWER BOOK.

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

5.1.1 State whether the monthly salary of DSTV league soccer players is arranged in ascending or descending order. (2)

5.1.2 One soccer follower claimed that the total salary in dollars for each of the World's TOP five (5) highest-paid soccer players is a nine-digit figure. Explain. (2)

5.1.3 Write down the total monthly salary of DSTV soccer players to Christiano Ronaldo's annual salary (in rands) in the form **1: …** (6)

5.1.4 Determine the probability (as a percentage) of randomly selecting a player from ANNEXURE D who earns more than a million rands. (3)

5.2 In 2022, a LOCAL municipality released its approved budget for the 2022/2023 financial year. ANNEXURE E in the ANSWER BOOK is an extract from the consolidated budget. Some of the amounts have been omitted.

Note: ALL amounts reflected are in thousands (R '000) of rands.

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

5.2.1 Determine the missing value **G**. (3)

5.2.2 Calculate the missing value **H** and state whether it is a surplus or a deficit.

You may use the formula:

H = Total income – Total expenditure (5)

5.2.3 Show that the percentage increase in employee costs is 8.3% from 2021/2022 to 2022/2023

You may use the following formula:

$$\textbf{Percentage increase} = \frac{\textbf{Difference in employee costs}}{\textbf{Original budgeted employee costs}} \times \textbf{100\%}$$

(3)

[24]

TOTAL: 150