education

Department of Education
FREE STATE PROVINCE

# PREPARATORY EXAMINATION

## GRADE 12

# MATHEMATICAL LITERACY P1

## SEPTEMBER 2022

## MARKS: 150

## TIME: 3 HOURS

**This question paper consists of 14 pages,**
**1 answer sheet and an addendum with 3 annexures.**

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## 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 3.1
   - ANNEXURE C for QUESTION 3.2

3. Answer QUESTION 5.3.4 on the attached ANSWER SHEET.
   Write your name and surname in the spaces provided on the ANSWER SHEET. Hand in the ANSWER SHEET with your ANSWER BOOK.

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

5. Start EACH question on a NEW page.

6. An approved calculator (non-programmable and non-graphical) may be used unless stated otherwise.

7. Show ALL calculations clearly.

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

9. Indicate units of measurement, where applicable.

10. Pictures and diagrams are NOT necessarily drawn to scale unless stated otherwise.

11. Write neatly and legibly.

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## QUESTION 1

1.1 TABLE 1 below shows the fees charged at Marie Secondary School.

**TABLE 1: SCHOOL AND HOSTEL FEES FOR 2020**

**Account holder**
Katleho Titus

Account for the year is payable on 1 February. Arrangement for quarterly or monthly (over 11 months) payments can be made.

**School Fees**

| Date | Description | Debit | Credit |
|---|---|---|---|
| 01/01/2020 | Balance brought forward | | R32,55 |
| 06/01/2020 | School fees 2020 | R12 540,00 | |
| 13/01/2020 | EFT bank deposit | | R3 135,00 |
| 03/04/2020 | EFT bank deposit | | R3 135,00 |
| 10/07/2020 | EFT bank deposit | | R3 135,00 |
| 30/10/2020 | EFT bank deposit | | R3 135,00 |

**Hostel Fees**

| Date | Description | Debit | Credit |
|---|---|---|---|
| 01/01/2020 | Balance brought forward | | R00,00 |
| 06/01/2020 | Hostel fees 2020 | R20 350,00 | |
| 13/01/2020 | EFT bank deposit | | R5 100,00 |
| 03/04/2020 | Hostel cancelled | | R15 250,00 |
| | | | |
| 01/12/2020 | Total due | | R00,00 |

[Adapted from actual school statement]

Use TABLE 1 above to answer the questions that follow.

1.1.1 Explain the meaning of the term *debit* in this context. (2)

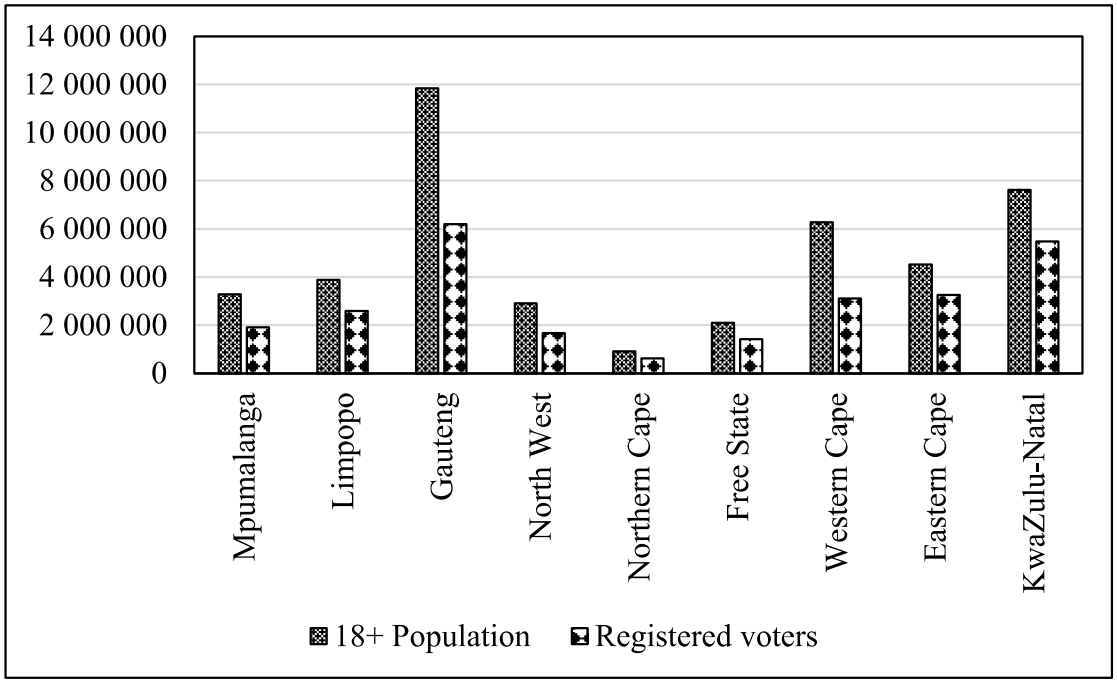
1.1.2 Write down the frequency of the school fee payments. (2)

1.1.3 Identify a descriptor that indicates Katleho did not stay at home during the first three months of 2020. (2)

1.1.4 Determine the school fee amount to be paid if the monthly payment option was used. (3)

1.1.5 Calculate the total amount paid for school and hostel fees in 2020. (3)

1.2 The graph below indicates the number of registered voters per province for the 2021 municipal elections.




[Source:elections.org.za]

Use the graph above to answer the questions that follow.

1.2.1 Identify the type of graph drawn. (2)

1.2.2 Write down the minimum age required for voting. (2)

1.2.3 Determine the probability of randomly selecting a province where the number of registered voters is higher than the voting population. (2)

1.2.4 Express the number 5 471 539 in words. (2)

1.2.5 Write down the number of provinces taking part in the municipal elections. (2)

1.3 Buying a cell phone is sometimes not easy as one has to compare the storage capacities and the price.

The information below indicates the prices charged for different storage capacities of the same brand of cell phone.



| **Capacity** | **Cash price** |
|---|---|
| 256 GB | R25 899 |
| 128 GB | R23 699 |
| 512 GB | R30 899 |
| 1 TB | R35 299 |

**NOTE:** GB stands for gigabyte
TB stands for terabyte
1000 GB = 1TB

Study the information above to answer the questions that follow.

1.3.1 Write down the cash price of a cell phone with the lowest capacity. (2)

1.3.2 Arrange the cell phone capacity in descending order. (2)

1.3.3 Determine the price difference between a 512 GB and a 256 GB cell phone. (2)

1.3.4 Round R23 699 to the nearest thousand rands. (2)
**[30]**

## QUESTION 2

2.1 South Africans employ just over one million domestic workers across the country. In 2019 the National Minimum Wage was introduced, which stated that domestic workers must be paid at least a minimum of R15,00 an hour.

Tables 2 and 3 on ANNEXURE A, illustrate the scenario for one month, for three domestic workers, after the introduction of the National Minimum Wage.

Use TABLES 2 and 3 on ANNEXURE A and the above information to answer the questions that follow.

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

2.1.2 State whether the domestic workers have a surplus or a deficit. (2)

2.1.3 Calculate the missing values **A** and **B**. (3)

2.1.4 Show with calculations that Domestic worker 1 budgets 77% more for food than electricity. (5)

2.1.5 Determine the probability (as a common fraction) of not selecting a domestic worker who worked more than 20 days. (2)

2.1.6 Provide TWO possible reasons why all the workers spend the same amount on food. (4)

2.1.7 Domestic worker 2 claimed that if the National Minimum Wage can increase to R27,00 per hour, there can be money left after paying all the expenses.

Verify, showing all calculations, whether the claim is valid. (5)

2.2 During a particular month, Domestic worker 1's employer, Debbie, used 25 kℓ of water.

TABLE 4 shows the residential water tariffs, including VAT.

**TABLE 4: RESIDENTIAL WATER TARIFFS INCLUDING VAT**

| Block | Tariff in kilolitres (kℓ) | Tariff in Rands per kilolitre (kℓ) |
|---|---|---|
| Block 1 | 0–6 kℓ | R10,34 |
| Block 2 | 7–15 kℓ | R24,54 |
| Block 3 | 16–30 kℓ | R27,63 |
| Block 4 | 31–60 kℓ | R33,10 |
| Block 5 | 61 or more kℓ | R38,91 |

[Source: Mangaung.co.za]

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

2.2.1 What does the acronym *VAT* stand for? (2)

2.2.2 Determine the maximum number of kℓ that can be charged in Block 2. (2)

2.2.3 Calculate the amount that Debbie will pay for the water used. (5)

2.3 Debbie wants to buy a water purifying system for her drinking water. The following options are available for her.

| PAYMENT OPTIONS | PICTURE OF A WATER PURIFYING SYSTEM |
|---|---|
| **Option 1:**<br>The cash price is R2 299<br><br>**Option 2:**<br>• R216 per month<br>• The amount includes insurance and service fee<br>• 24 months to pay<br>• Interest 17,25% p.a.<br><br>**Option 3:**<br>• R211 per month<br>• Amount excludes insurance and service fee<br>• 12 months<br>• Interest 17,5% p.a. |  |

[Source: www.takealot.com]

Use the information above to answer the questions that follow.

2.3.1 Write the acronym *p.a.* in full. (2)

2.3.2 Calculate the amount of interest p.a. charged in option 3. (3)

2.3.3 Debbie told her domestic worker that she would pay more than double the cash price if she chose to buy using option 2.

Verify, showing all calculations, if Debbie's statement is correct. (5)
**[42]**

## QUESTION 3

3.1 Agriculture plays a crucial role in food security by supplying the basic food products to keep millions of people fed every day. In South Africa, the industry produces various products, from beef and poultry to maize, fruits, and vegetables.

TABLE 5 on ANNEXURE B shows the commercial farming land per province in South Africa in 2017.

Use TABLE 5 on ANNEXURE B to answer the questions that follow.

3.1.1 State why the data for the farming land is regarded as continuous. (2)

3.1.2 Write down the province with the largest grazing land. (2)

3.1.3 The mean number of farmworkers in South Africa in 2017 was 84 180,33. Hence determine **A**, the number of farmworkers in the Free State in 2017. (4)

3.1.4 Calculate the value of **B**. (3)

3.1.5 A farmer stated that in Western Cape, there are 27 farmworkers for every farm and that in Gauteng, there are 16 farm workers for every farm.

Determine, using unit ratios, whether the statement is correct. (6)

3.1.6 Determine the range of the arable land. (3)

3.2 The pie chart on ANNEXURE C shows the types and percentages of the livestock population (in %) in South Africa in November 2019.

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

3.2.1 Calculate the actual number of the buffalo population. (4)

3.2.2 Give an example of livestock that can be classified as OTHER. (2)

3.2.3 Determine the probability (as a decimal) of randomly selecting beef cattle from the percentage cattle livestock population. (3)

3.2.4 There was an increase of 15,7% in the total livestock population between November 2019 and November 2020.

Calculate the total livestock population in November 2020. (3)

**[32]**

## QUESTION 4

4.1 Many South Africans use the weekly advertising in the local newspapers to help with shopping decisions.

TABLE 6 below indicates the number of copies distributed and average monthly household income around some areas in Pretoria.

**TABLE 6: NUMBER OF COPIES DISTRIBUTED AND AVERAGE MONTHLY HOUSEHOLD INCOME**

| Area | Number of distributed copies | Average readership in % | Average monthly household income in Rands (R) |
|---|---|---|---|
| Pretoria East | 79 210 | 76 | 30 685 |
| Centurion | 60 350 | 61 | 24 695 |
| Pretoria North | 40 100 | 62 | 28 435 |
| Moot | 33 630 | 76 | 20 330 |
| Pretoria West | 20 250 | 70 | 20 250 |
| Pretoria Far North | 29 000 | 80 | 14 660 |
| Mamelodi | 30 000 | 76 | 16 360 |

[Source: rekord.co.za]

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

4.1.1 State the frequency of receiving this newspaper in Pretoria. (2)

4.1.2 Write down the mode for the average readership. (2)

4.1.3 Determine the interquartile range (IQR) for the average monthly household income in Pretoria.

You may use the formula: **IQR = Q3 – Q1** (5)

4.2 The cost for a quarter of a page to advertise in a local newspaper in the United Kingdom (UK) is £250.

The exchange rate between the South African rand and the United Kingdom pound on 15 November 2021 is given below:

| SOUTH AFRICAN RAND (ZAR) | UNITED KINGDOM POUND STERLING (£) |
|---|---|
| 20,38 | 1 |
| 1 | 0,049 |

[Source: www.xe.com]

Use the information above to answer the questions that follow.

4.2.1 Write down the exchange rate of the South African rand to the UK pound in the form:
**R1 = …** (2)

4.2.2 Determine (in rands) the price for advertising in a local newspaper. (3)

4.3 Mr Malinga, a 52-year-old resident at Pretoria North, earned a monthly taxable income of R35 357,00 during the 2021/22 tax year. During this time, Mr Malinga was a member of a medical fund for himself, his wife and his two children.

Table 7 below shows the tax table for the 2021/22 tax year.

**TABLE 7: 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 |

[Adapted from www.sars.gov.za]

Table 8 below shows the tax rebates and medical tax credits for the 2021/22 tax year.

**TABLE 8: 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 |
| **MEDICAL TAX CREDITS PER MONTH** | |
| Main member | R332 |
| First member | R332 |
| Each additional member | R224 |

[Adapted from www.sars.gov.za]

Use TABLES 7 and 8 above to answer the question that follow.

4.3.1 Determine Mr Malinga's annual taxable income. (2)

4.3.2 Show with calculations that Mr Malinga will receive R13 344 medical tax credits for the 2021/22 tax year. (4)

4.3.3 Calculate the amount of tax Mr Malinga must pay for 2021/22 tax year. (6)

**[26]**

## QUESTION 5

Mogodu Monday has become a popular South African weekly occasion wherein many celebrate the most unpopular day of the week by turning it into an enjoyable time over great food with family and friends. During this day, mogodu is often enjoyed with a side of warm pap, samp or dumpling.

A small business sells a plate of mogodu for R50,00.

| NOTE WELL | PLATE OF MOGODU SERVED WITH PAP |
|---|---|
| **Mogodu** is a combination of chopped tripe and intestines served as a stew.<br><br>**Pap** is a traditional porridge made from maize meal. |  |

The cost to make one plate of mogodu is given by the following formula:

**Total cost = R1 200 + 26 m** where m = number of plates

[Adapted from #ReMojaKaofela@MojaCafe]

Use the information above to answer the questions that follow.

5.1 Use the equation above to determine the number of plates sold if the total cost is R2 760. (4)

5.2 Construct a formula that can be used to calculate the income from selling mogodu, in the form:

**Income = …** (2)

5.3 TABLE 9 below shows the total cost and income from selling plates of mogodu.

**TABLE 9: COST AND INCOME OF SELLING PLATES OF MOGODU**

| **Number of plates** | **0** | **10** | **30** | **50** | **70** | **90** | **100** |
|---|---|---|---|---|---|---|---|
| **Cost (R)** | 1 200 | 1 460 | 1 980 | 2 500 | 3 020 | 3 540 | 3 800 |
| **Income (R)** | 0 | 500 | 1 500 | 2 500 | 3 500 | 4 500 | 5 000 |

5.3.1 Explain the term *break even* in this context and identify the number of plates that must be sold to break even. (3)

5.3.2 The manager of the small business stated that she could make a $\frac{8}{25}$ profit on 100 plates of mogodu sold.

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

5.3.3 Write down the type of graph that can be used to represent the information on TABLE 9 above. (2)

5.3.4 The income graph has already been drawn on the attached ANSWER SHEET.

Use the information from Table 9 to draw on the same set of axes a graph representing the cost of plates of mogodu. (3)
**[20]**

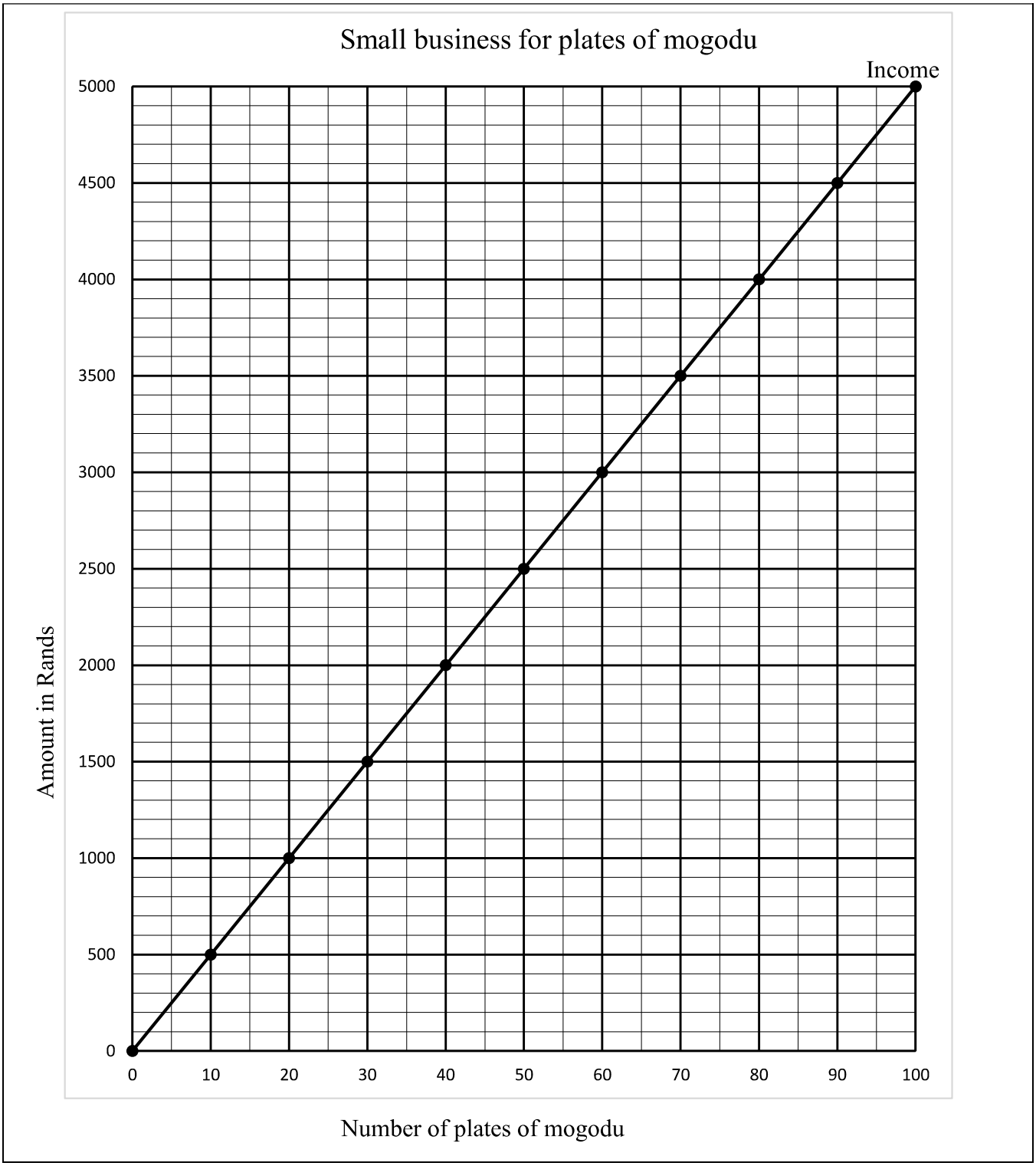
**TOTAL: 150**

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**ANSWER SHEET**

**QUESTION 5.3.4**

**NAME AND SURNAME:**_____




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