LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

MOPANI WEST DISTRICT

GRADE 12

MATHEMATICAL LITERACY P1

PRE-JUNE EXAM

19 MAY 2023

Stanmorephysics

MARKS: 100

TIME: 2 hours

THIS QUESTION PAPER CONSISTS OF 8 PAGES INCLUDING THIS COVER PAGE

Please turn over

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.

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

3. Start EACH question on a NEW page.

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. Hazel operates a Spaza Shop and orders his stock, in cartons, from makro. Given below is an extract from a makro catalogue and all prices include 15% VAT. The price of each carton is written below each item.

1.1.1 Explain the meaning of the word "selling price" in the context of hazel's shop. (2)

1.1.2 Write down the cost price for a 2-liter bottle of soda cold drink. (2)

1.1.3 Identify items which cost the same amount per carton. (2)

1.1.4 Determine the total number of items on the carton. (2)

1.1.5 Calculate the total cost price of the items on the cartons above. (3)

[11]

QUESTION 2

2.1

HAZEL decides to start a new business venture and bake chocolate muffins. She sells the muffins for R25,00 each.
Her only fixed cost is paying her 16-year-old niece R500 a month to maintain the business' social media page.
Her variable costs include the ingredients and the electricity. She calculated that the variable cost per muffin is R15,00.

Use the information above to answer the following questions.

2.1.1 Define the term fixed cost in the given context. (2)

2.1.2 Explain why electricity is classified as a variable cost. (2)

2.1.3 HAZEL states that she will make R1 500 profit if she sells 200 muffins.

Verify, showing all calculations whether her statement is correct. (6)

2.2.

HAZEL did not qualify to receive NSFAS and approached the bank for a loan to pay for her university fees for one year.
She applied for a loan of R30 000, 00 with the following conditions:

- A once-off initiation fee of R1 207, 50 (15% VAT inclusive)
- A monthly service fee of R69
- An interest rate of 24, 5% compounded annually**.**

Use the information above to answer the questions that follow.

2.2.1 Determine the amount of VAT charged on the initiation fee. (3)

2.2.2 HAZEL stated that the total loan value will be R19 364, 25 more than the original amount if she paid it off over a 24-month period.

Verify, showing all calculations, if HAZEL statement is correct. (8)

2.2.3 State one reason why a student would choose to study in a province different from their home province. (2)

2.3

MR MAAKE is 35 years old and earns a gross salary of R27 500. She contributes 7.5% of his annual gross income towards pension fund. He is married with one child and a member of the medical aid scheme.

TABLE 1: TAX RATES FOR 2022/23 TAX YEAR (1 Mar.2022 to 28 Feb.2023)

TAX BRACKET	TAXABLE INCOME(R)	RATES OF TAX (R)
1	1 – 226 000	18% of taxable income
2	226 001 – 353 100	40 680 +26% of taxable income above 226 000
3	353 101 – 488 700	73 726 + 31% of taxable income above 353 100
4	488 701 – 641 400	115 762 + 36% of taxable income above 488 700
5	641 401 – 817 600	170 734 + 39% of taxable income above 641 400
6	817 601 – 1 731 600	239 452 + 41% of taxable income above 641 400
7	1 731 601 and above	614 192 + 45% of taxable income above 1 731 600

[Adapted from www.sars.gov.za]

TABLE 2 below shows the tax rebates and medical credits for 2022/23 tax year.

TABLE 2: TAX REBATES AND MEDICAL AID CREDITS FOR THE 2022/23 TAX YEAR

TAX REBATE	
Primary	R16 425
Secondary (65 and olser)	R9 000
Tertiary (75 and older)	R2 997
MEDICAL CREDITS PER MONTH FOR MEDICAL FUND MEMBERS	
Main member	R347
First dependent	R347
Each additional dependent	R234

[Adapted from www.sars.gov.za]

Use TABLE 1 and TABLE 2 above to answer the questions that follow.

2.3.1. Explain the word gross income as it is used in the given context. (2)

2.3.2. Determine MR MAAKE annual taxable income for the year 2022/23. (5)

2.3.3 Calculate his monthly tax. (6)

2.3.4. Due to the repo rate in the country his salary was reduced from R27500 to R24800. Calculate the percentage decrease. (4)

[40]

QUESTION 3

The data below shows the percentage marks achieved by grade 12 mathematical literacy learners.
The class consist of 20 learners.

64 57 58 62 59 **A** 60 61 62 71
62 65 66 64 75 80 **B** **B** 92 85

A is the lowest percentage mark.

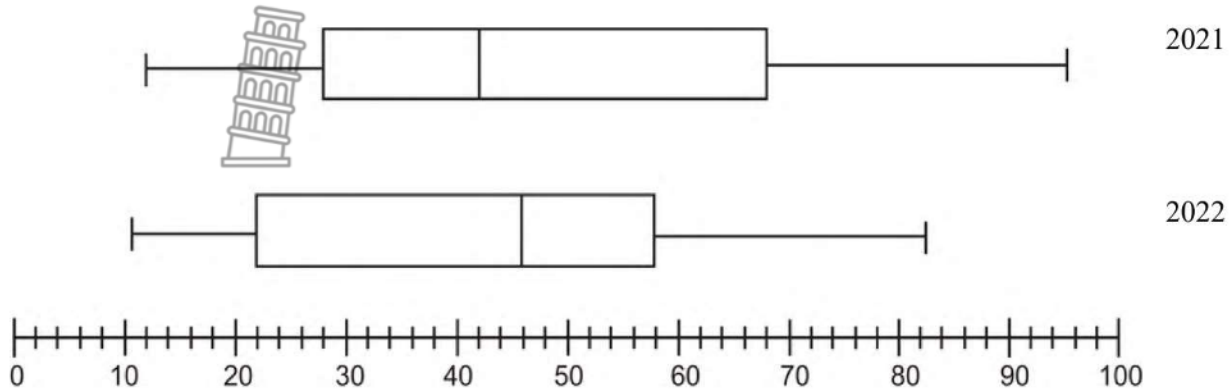Use the information above to answer the questions that follow.

3.1.1. State the difference between discrete data and continuous data. (2)

3.1.2. Determine the percentage of the data set that lies between the lower
quartile and the upper quartile. (2)

3.1.3. Calculate the value of A, if the Range value obtained by learners is 36. (3)

3.1.4. Write down the modal percentage. (2)

3.1.5. Determine the value of B, if the mean value obtained by learners is 68. (6)

3.1.6. Determine the median of the data. (3)

3.1.7. Determine the probability as a fraction of randomly selecting a learner who obtained
more than 80%. (2)

3.1.8. Determine the inter-quartile range of the data. (4)

[24]

QUESTION 4

4.1 The box-and-whisker plots below show the March Test Mathematical Literacy results for the 2022 and 2021 Mokone High School Mathematical Literacy classes.

Use the diagram above to answer the questions that follow.

4.1.1 Write down the minimum and maximum marks for the 2021 class.   (2)

4.1.2 The class of 2021 had 120 Mathematical Literacy learners. Calculate the number of learners who got a mark that was less than the Lower Quartile (Q1) as well as the value of Q1.   (4)

4.1.3 Calculate the interquartile range (IQR) for the 2022 class marks.

You may use the formula:
$$IQR = Q3 - Q1$$ (4)

4.1.4 Compare the two box-and-whisker-plots and decide on the class whose learners performed better in the March test. Justify your answer.   (4)

4.2

| MR Maake lives in Tzaneen Aqua Park, in the Greater Tzaneen 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 3: COST OF PREPAID UNITS OF ELECTRICITY BLOCK UNITS (kWh) RATE c/kWh (INCLUDING VAT)

BLOCK	UNIT (KWH)	RATE c/KWH (INCLUDING VAT)
1	0-50	144.72
2	51-350	186.02
3	351-600	261.87
4	ABOVE 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 3 and information above to answer the questions that follow.

4.3.1 State any TWO reasons why it is an advantage for the municipality to sell prepaid electricity. (2)

4.3.2 Determine the number of units MR MAAKE received when he bought prepaid electricity for R68,02. (3)

4.3.3 MR MAAKE 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:

$$\% \text{ Profit} = \frac{selling\ prie\ for\ units - cost\ price\ for\ the\ units}{ost\ price\ for\ the\ units} \times 100\%$$

(6)
[25]

TOTAL: 100

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1.1.1	The amount buyers will pay for the goods HAZEL is selling ✓✓O	2E explanation (2)	F L 1
1.1.2	$\frac{R55}{6} = R9.17$ ✓✓A	2A correct answer (2)	F L 1
1.1.3	Dish washer, toilet cleaner, pilchards ✓✓A	2A for toilet cleaner, for dish wash, pilchard R85 (2)	F L 1
1.1.4	=13 ✓✓A	2A correct answer AO (2)	F L 1
1.1.5	Total Cost Price=R85+R85+R85+R90+R55+R9+R70+R 160 +R100+95+R70+90+60 ✓A✓M =R1 073 ✓CA	1A all correct values 1M adding 1CA answer 2 values left out 1 out of 3 (3)	F L 1

Question 1

QUESTION 2

2.1.1	Fixed costs refer to the costs (R500) that are constant/stays the same despite how many muffins are produced. ✓✓A	2A definition (2)	F L1
2.1.2	Because the electricity cost does not stay the same/ remain constant every month. ✓✓	2O explanation given. (2)	F L1
2.1.3	✓RT Profit per muffin / Wins per muffin = R25 − R15 ✓M Profit per muffin / Wins per muffin = R10 ✓CA ✓M Profit selling 200 muffins. = (200 × R10) − R500 ✓M Profit selling 200 muffins. = R1 500 Therefore, HAZEL is correct. ✓O OR Income selling 200 muffins.	1RT values 1M subtract. 1CA R10 1M multiply by 200 1M subtract 500. 1O Correct. (6)	F L3

	= R25 × 200		
	Income selling 200 muffins.		
	= R 5 000		
	Expenses for 200 muffins		
	= R500 + (R15 × 200)		
	Expenses for 200 muffins		
	= R500 + R3 000		
	Expenses for 200 muffins		
	= R3 500		
	Profit = R5 000 – R3 500		
	Profit = R1 500		
	Therefore, HAZEL is correct.		

2.2

2.2.1	VAT 15÷115× R1 207,50 ✓✓MA = R157,50 ✓A OR/OF VAT $= R1\,207.50 \times \frac{100}{115}$✓MA = R1 050 ✓MA ∴ R1 207,50 – R1 050 = R157,50 ✓A	1A correct percentage 1M multiplying by correct amount 1CA amount of VAT MA dividing correct values 1M subtracting values 1CA amount of VAT AO (3)	F L2
2.2.2	Year 1 R30 000 × 24,5% = R7 350 ✓MA R30 000 + R7 350 = R37 350 ✓CA Year 2 R37 350 × 24,5% = R9 150,75 R37 350 + R9 150,75 = R46 500,75 ✓CA Monthly service fee = R69 × 24 = R1 656 ✓A Total cost of loan = R46 500,75 + R1 656 + R1 207,50 ✓M = R49 364,25 ✓CA Difference = R49 364,25 – R30 000	1MA calculating interest 1CA 2nd year principal 1CA accumulated amount 1A service fee 1M adding all amounts 1CA total cost of loan 1CA difference 1O verification (8)	F L4

	= R19 364,25 ✓CA She is correct ✓O		
2.2.3	Their course (degree/diploma) of interest is not offered in their province (diploma) Freedom from parents To explore other provinces Influence of friends Any other relevant reason ✓✓O	2O reason	F L4

2.3

2.3.1	Gross income is the amount of her salary (income) before deductions are made.	2O correct explanation (2)	F L1 M
2.3.2	Annual taxable income excluding bonus: Pension fund $= R27500 \times \frac{705}{100}$ $= R2062.50$ ✓A Annual taxable income $=(R27500 - R2\,062.50)$ ✓M $= R25\,437.50.$ ✓CA $= R25\,437.50 \times 12$ ✓MA $= R305\,250$ ✓CA	1M multiplying by 12 1 Pension fund 1A subtraction 1M method 1CA answer/accuracy (5)	F L4
2.3.3	Annual tax: $= 40\,680 + 26\%\,(R305\,250 - 226\,000)$ ✓SF $= R61\,285,80$ ✓CA $= R61\,285 - R16425$ ✓MA $= R44\,860$ $= R44\,860 - (347 + 347 + 234)$ ✓MA $= R43\,932$ Monthly tax $= R43\,932 \div 12$ ✓M $= R3\,661$ ✓CA	1SF Sustitution 1A correct tax rate 1M subtracting rebate and MTC 1CA medical 1M dividing by 12 1CA answer/accuracy (6)	F L4
2.3.4	Percentage $=\frac{24800 - 27500}{27500} \times 100$ ✓✓M $= -9,8\%$ ✓A OR Percentage decrease $=(R27500 - R24800) \div R24800 \times 100$ ✓MA ✓M $= 9,8\%$ ✓A	1MA subtracting correct values 1M dividing by R27500 1A answer OR 1SF for substitution 1M dividing by R8 481	F L

Mathematical

			1A answer (3)	

QUESTION 3

3.1

3.1.1	Discrete data is a set of values that can be counted as a whole number. ✓A Continuous data is data that you measure as a decimal number. ✓ A	1 discrete 1 continuous (2)A	D L2
3.1.2	50% ✓✓A	2A correct answer	DL1
3.1.3	Range = Maximum value – Minimum value 36= 92 – A ✓MA A= 92-36 =56 ✓A	1MA subtracting correct values 1A answer (2)	
3.1.4	62 ✓✓A	2A	
3.1.5	Mean $\square SF$ $68= \dfrac{64+57+58+62+59+56+61+62+71+62+65+66+64+75+80+B+B+92+85}{20}$ $68 = \dfrac{2B+673}{20} \square MA$ 2B + 1199 = 1360 2B = 161 $\square$MA **B=80.5** **B = 81** $\square$CA **OR/OF** 2B + 1199 = 68× 20 $\square$ $\square$MA 2B + 1199 = 1360 2B = 161$\square$MA B=80.5 **B = 81**$\square$	1SF substitution mean correctly 1MA dividing by 9 1MA dividing by 2 1CA simplification OR/OF 1SF substitution mean correctly 1MA multiplying by 9 1MA dividing by 2 1CA simplification (6)	
3.1.6	Median: 56 57 58 59 60 61 62 62 62 64	1M arranging	

	64 65 66 71 75 80 81 81 85 92 ✓M 56; 57; 58; 59; 61; 62; 62; 62; 64; 64; 65; 66; 71; 75; 80; 81; 81; 85; 92 Median = $\frac{64+64}{2}$ ✓M = 64 = 64 ✓CA	data 1M concept of median 1CA answer (3)	
3.1.7	Probability = $\frac{4}{20}$	1RT correct % 1M fractional (2)	P L2 M
3.1.8	56 57 58 59 60 61 62 62 62 64 64 65 66 71 75 80 81 81 85 92 Quartile 1 = $\frac{60+61}{2}$ ✓A = 60.5 Quartile 3 = $\frac{75+80}{2}$ = 77.5 ✓A Interquartile range = Q3 – Q1 = 77.5 – 60.5 ✓M = 17 ✓CA	1M arranging values 1A Q1 1A Q3 1M concept of IQR 1CA answer (4)	DG L3

QUESTION 4

4.1

4.1.1	Minimum=12% ✓RG Maximum=96% ✓RG	1 RG for the minimum 1 RG for the maximum (2)	DH L2
4.1.2	Lower Quartile Mark=28% ✓RG Number of learners=120 ✓A4 ✓M =34 ✓CA OR Lower Quartile Mark=28% ✓RG Number of learners=28% of 120 ✓A =25100×120 ✓M =34 ✓CA	1RGfor Lower Quartile 1A for 120 1M for dividing by 4 1CA for the answer OR 1RG for Lower Quartile	DH L3

	OR Lower Quartile Mark=28%✓RG Number of learners=0,28×120✓✓M =34✓CA	1A for 25% of 120 1M for method 1CA for the answer OR 1RGfor Lower Quartile 1M for 0,25 1M for multiplying 1CA for the answer (4)	
4.1.3	Lower Quartile=22%✓RG Upper Quartile=58%✓RG IQR=58%−22%✓SF =36%✓CA	1RG for Lower Quartile 1RG for Upper Quartile 1SF substitution 1CA for answer/accuracy (4)	DH L3
4.1.4	2021 Class ✓A Higher maximum mark✓O Higher Lower Quartile ✓O Higher Upper Quartile ✓O	1A for the class 1O maximum mark 1O for Lower Quartile 1O for Upper Quartile (4)	DH L4

4.2

4.2.1	Immediately get money from customers It easy to collect its income from electricity No bad debts on prepaid electricity It enables its customers to save electricity and the municipality can supply more customers It gets more income on customers that use more electricity ✓✓ Accept any other logical explanation.	1O reason 1O reason (2)	F L1 M
4.2.2	Units purchased = $\frac{R68.02}{1.4472}$ ✓✓ = 47 kWh✓	1MA division with the correct values 1A answer (3)	F L3 M
4.2.3	Municipality's cost = 290 × 1,33 ✓ = R385,50✓ Customer pays: =50 × 1,4472 = R72,36✓	1A municipality's cost 1MA multiplication and simplification in block 1	F L4 M

=240 × 1,8606 = R446,544 ✓ Total price paid = R72,36 + R446,544 = R518,90 % Profit $= \frac{R518.90 - R385.50}{R385.50} \times 100$ = 34,60 % ✓ Valid ✓	1MA multiplication and simplification in block 2 1SF substitution in formula 1CA answer 1O answer (6)