LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
EDUCATION

VHEMBE WEST DISTRICT

GRADE 12

MATHEMATICAL LITERACY

INVESTIGATION

2023

TOTAL: 50 MARKS

DURATION: 80 minutes maximum

The paper consists of 6 pages, including the cover page.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of **THREE** questions. Answer ALL the questions.

2. Formulas are not given as this is an open book task. Textbooks, homework books and other notes are allowed

3. Show ALL calculations.

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

5. Start EACH question on a NEW page.

6. Round off all final answers appropriately according to the context unless stated otherwise.

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

8. Otherwise

9. Indicate units of measurement where applicable.

QUESTION 1

Mr Naidoo wants to borrow R25 000 from a micro-lender to repair damages to his house caused by storm.

Loan document repayment options (in rand) for a loan from a micro-lender

	Number of monthly instalments				
	12	**18**	**24**	**36**	**42**
Loan amount	25 000.00	25 000.00	25 000.00	25 000.00	25 000.00
Initial fee*	1 140.00	1 140.00	1 140.00	1 140.00	1 140.00
Monthly instalment**	2 283.00	1 875.00	1 562.50	1 145.83	789.20
Admin fee***	57.00	57.00	57.00	57.00	57.00

Note:

* An initiation fee is the amount charged by the micro-lender to process the loan application and is payable when the loan has been approved.

**   A monthly instalment is the amount paid monthly.

*** A monthly administration fee is an additional cost that is added to the monthly instalment.

Use the information above to answer the questions that follow.

1.1.1   What is the monthly instalment if Mr Naidoo decides to pay the loan over 36 months?   (2)

1.1.2   Calculate the admin fee for loan of 36 months.   (2)

1.2

> Jacob`s parents work on a farm and below is their budget for February 2011.
>
> **TABLE1: INCOME AND EXPENDITURE OF JACOB`S PARENTS**
>
> | Income | | Expenditure | |
> |---|---|---|---|
> | Father`s salary | R7 150 | Bond instalment | R2 700 |
> | Mother`s salary | **A** | Car instalment | 1 950 |
> | Interest on investment | R534 | Water and electricity | **C** |
> | | | Cell phones | R400 |
> | | | Food | R3 000 |
> | | | Clothes | R1 200 |
> | | | Petrol and car maintenance | R1 500 |
> | | | Insurance | R392 |
> | | | School fees | **B** |
> | | | Savings | **D** |
> | Total income | **R12 184** | **Total expenditure** | **R12 184** |

Use **TABLE 1** above to answer the questions that follow.

1.2.1   Calculate Jacob`s mother`s salary (**A**).   (2)

1.2.2   The school fee are R60 per month per learner. The family has two children in school and they pay school fees monthly. Calculate the total monthly school fees (**B**).   (2)

1.2.3   The family`s expenditure on water and electricity was R180 per months, during the previous year but they want to budget for an increase of 15%. Calculate the new amount after the 15% increase for water and electricity (**C**).   (2)

1.2.4   The family wants to save $\frac{1}{10}$ of the father`s salary every month. Calculate the amount they want to save (**D**).   (2)

1.2.5   During the previous year, the family spent R1 200 per month on petrol and maintenance. They increased this amount to R1 500 per month for the current budget. Calculate the percentage increase for petrol and vehicle maintenance.   (3)

[15]

QUESTION 2

2.1

The extract for the amount of water , in kl , used by Sipho is given as :

Reading 1 September 2022	Reading 1 October 2022
021 186	021 243

TABLE 2 : RESIDENTIAL WATER TARIFFS

Residential water tariffs		
Water steps 1kl = 1000 litres	September 2022 Rands (Including VAT)	October 2022 Rands (Including VAT)
Step 1 (0 – 6kl)	R17.92	R17.37
Step 2 (7 – 10kl)	R25.19	R23.87
Step 3 (11 – 35kl)	R36.19	R32.43
Step 4 (36 and more)	R79.46	R59.85

VAT will be charged at 15 %   *[Adapted from www.businessbtech.co.za]*

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

2.1   Write down the tariff in October 2022 for water usage between 7 and 10 kl.   (2)

2.2   Calculate the percentage change in tariff from September to October for use of   (3)

36 or more litres. State whether it was an increase or decrease.

2.3   Determine the number of kilolitres (kl) of water Sipho used in October 2022.   (3)

2.4   Sipho states that his water bill will be R2 155.00 excluding VAT. Verify   (6)

showing ALL calculations, whether his statement is valid.

2.5   Write one way on how Sipho can save water to reduce his water bill.   (2)

[16]

QUESTION 3

3.1 Helen is 67 years old. She has an annual taxable income of R36 4321 per year. She contributes towards a medical aid for herself and her husband.

**TABLE 3 : INCOME TAX – INDIVIDUALS AND TRUSTS
(YEAR ENDING 28 FEBRUARY 2022)**

TAX brackets	Taxable income (in Rand)	Rate of Tax (in Rand)
1	0 – 216 200	18% of taxable income
2	216 201 – 337 800	38916 + 26% of taxable income above 216 200
3	337 801 – 467 500	70 352 + 31% of taxable income above 337 800
4	467 501 – 613 600	110 739 + 36% of taxable income above 467 500
5	613 601 – 782 300	163 335 + 39% of taxable income above 613 600
6	782 201 – 1656 600	229 089 + 41% of taxable income above 782 200
7	1656 601 and above	1656 601 + 45% of taxable income above 1656 600

Tax rebate type	
Primary (all individuals)	R15714
Secondary Rebate (Age 65 to below 75)	R8613
Tertiary Rebate (Age 75 and older)	R2871

Tax threshold	
Below age 65	R87 300
Age 65 to below 75	R135 150
Age 75 and older	R151 100

Medical Aid – monthly tax credits	2021 / 2022
Main member	R310
First dependent	R310
Second dependent	R209
Third dependent	R209

[Adapted from SARS pocket tax guide 2021]

3.1	Explain the meaning of the term taxable income.	(2)
3.2	Write down, as a simplified ratio, the tax threshold of a person below 65 to the tax threshold of a person age 65 to below 75.	(3)
3.3	Determine the tax rebate amount Helen qualifies for.	(3)
3.4	Determine Helen's annual tax amount payable.	(7)
3.5	Give two reasons why it is necessary for citizens to pay personal income tax.	(4)

[19]

TOTAL MARKS: 50

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MATHEMATICAL LITERACY

MEMORANDUM

INVESTIGATION 2023

MARKS: 50

Symbol	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD	Reading from a table/ graph/diagram/map
SF	Correct substitution in a formula
O	Opinion
J	Justification/ Reason/ Deduction
P	Penalty, e.g. for no units, incorrect rounding off, etc
Re	Reason
Ro	Rounding

The memorandum consists of 4 pages including the cover page

Ques	Solution	Explanation	Mark
1.1.1	R1 145.83✓✓	2RT	2
1.1.2	36 x R57 = R2 052✓✓	1M multiplication 1A answer	2
1.2.1	Mother`s salary (A) = R12 184 – (R7 150 + R534) ✓ A = R4 500✓	1M subtracting 1A answer	2
1.2.2	R60 × 2✓ B = R120✓	1M multiplying by 2 1A answer	2
1.2.3	15% × R180 = R27✓ = R180 + R27 C = R207✓ **OR** R180 + 15% of R180 = R180 + 0.15 × R180✓ C = R207✓	1M % concept 1A correct answer 1M % concept 1A answer	2
1.2.4	$\frac{1}{10} \times$ R7 150✓ D = R715✓	1M multiplication 1A answer	2
1.2.5	Percentage increase = $\frac{R1\ 500 - R1\ 200}{R1\ 200} \times 100$✓✓ = R25%✓	2SF correct substitution 1A answer	3
			[15]
2.1.	R23.87 ✓✓	2A	2
2.2	$\frac{new\ value - old\ value}{old\ value} \times 100$ or $\frac{change}{original} \times 100$ $= \frac{59.85 - 79.46}{79.46} \times 100$ ✓ = -24.68 % ✓ Decrease ✓	 1SF 1S 1O	3
2.3	Number of kilolitre = 021 243 ✓ – 021 186 ✓ = 57kl ✓	1RT 1MA 1A	3
2.4	Lost of water 6kl ×R17.92 = R107.52✓ 4kl × R25.19 = R10.76✓ 25kl ×R36,19 = R904.75 22kl × R79.46 = R1 748.12 R107.52 + R100.76 + R904.75 + R1 748.12✓	1RT 1S 1CA 1MA 1A 1O	6

           please turn over

	= R2 861. 15 ✓ Cost without VAT R2 861.15 ÷ 1.15 ✓ R2 487.96 ✓ **OR** 6kl × R17.92 = R107.52 and R107.52 ÷ 1.15 = R93.50 4kl × R25.49 ✓ = R100.76 and R100.76 ✓ ÷ 1.15 ✓ = R87.62 ✓ 25kl × R36,19 = R904.75 and R904.75 ÷ 1.15 = R786.74 22kl × R79.46 = R1 748.12 and R79.46 ÷ 1.15 = R1 520.10 R93.50 + R87.62 + RR786.74 + R1 520.10 = R2 487.96 ✓ Sipho's 's statement is not valid , she will pay R332.96 more ✓		
2.5	Install roof gutters, downspouts and underground outlets. ✓✓ Create a system to capture the water from the roof of your burn. ✓✓	2O	2
			[16]
3.1	Taxable income – the part of income on which tax must be paid.✓✓ **OR** Taxable income = Gross income – tax deductible deductions ✓✓	2A	2
3.2	87 300 ✓ : 135 150 ✓ 582 : 901 ✓ (if order is correct)	1RT 1MA 1MCA	3
3.3	Tax rebate R15 714 ✓ + R8 613✓ = R24 327 ✓	1RT 1MA 1A	3
3.4	Annual tax payable = R70 352 ✓ + 31% (R364 321 ✓ – R337 800) = R70 352 + 31% (R26 521) = R70 352 + R8221.51 ✓ = R78 573 .51 ✓ Tax – Deductions = R78573.51 – R24 327 – (310 x 2 ✓ x 12) = R78 573.51 – R24 327 – R7 440 ✓	1RT 1SF 1S 1CA 1M 1CA 1A	7

please turn over

	= R46 806.51 ✓		
3.1.5	So that government can provide better public services such as police services and better education. ✓✓ Government also pays salaries of civil servants. ✓✓	4O	4
			[19]
	TOTAL MARKS: 50		