MATHEMATICAL LITERACY

GRADE 12 INVESTIGATION

TOPIC: FINANCE

2022 TERM 1

MARKS: 50

SCHOOL: _____

LEARNER: _____

I, _____, hereby declare that the content of my responses to the tasks of this investigation is my own work. In instances where resources were used, the required reference details are indicated.

Learner Signature: _____ Date: _____

EXAMINER: _____

MODERATOR: _____

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Complete ALL PARTS of this INVESTIGATION.

2. Clearly show ALL calculations, diagrams, graphs, et cetera that you have used in determining the answers.

3. Marks will be awarded for stating your resources.

4. Answers only will not necessarily be awarded full marks.

5. You may use an approved scientific calculator (non-programmable and nongraphic), unless stated otherwise.

6. If necessary, round off answers to TWO decimal places, unless stated otherwise.

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

8. Write neatly and legibly.

ORIGINAL OPTION

Martin approached a vehicle finance company after deciding on a car priced at R 285 000. The company initially offered him 72 months to make repayments of R 5 439,36 per month.

The graph on ANNEXURE A represents the total repayments of the 72 months. Study the graph and answer the questions that follow.

QUESTIONS

1. Why does the graph start at 0 months and R 0,00? (2)

2. Would you advice the option to start repaying one month after receiving the car? Explain your answer. (2)

3. How much money will Martin repay after:

   3.1 one month (2)

   3.2 10 months (2)

   3.3 36 months? (2)

4. Determine a formula to represent the relationship depicted in the graph. (2)

5. How much money will Martin have paid after 72 months? (2)

ALTERNATIVE OPTION

The company also introduced an alternative option. With this option Martin will have to pay a deposit of 30,6% of the selling price of the car. Monthly repayments will be R 3 457,10.

6. Calculate the deposit amount. (2)

7. Determine the amount of money Martin will pay more if he chooses the original option rather than the alternative option. (2)

8. Complete the table shown below for alternative option on ANNEXURE B.

Number of Months	0	8	16	24	32	40	48	56	64	72
Total Amount Repaid (R)			142 523,60			225 494,00			308 464,40	

(4)

9. Determine a formula to represent the relationship for the alternative option depicted in the table. (3)

10. Draw a graph on ANNEXURE A to represent the alternative method. Indicate the break-even point. (6)

11. Describe what a *break-even* point entails. (2)

12. Write down the approximate break-even point from ANNEXURE A. (4)

13. Identify the option (*original* or *alternative*) which is the cheapest after:

    13.1 24 months (2)

    13.2 40 months (2)

    13.3 64 months. (2)

14. Determine the total amount of interest Martin would pay with the:

    14.1 original option (2)

    14.2 alternative option. (2)

CONCLUSION

15. Formulate your own conclusion regarding the original and alternative option.

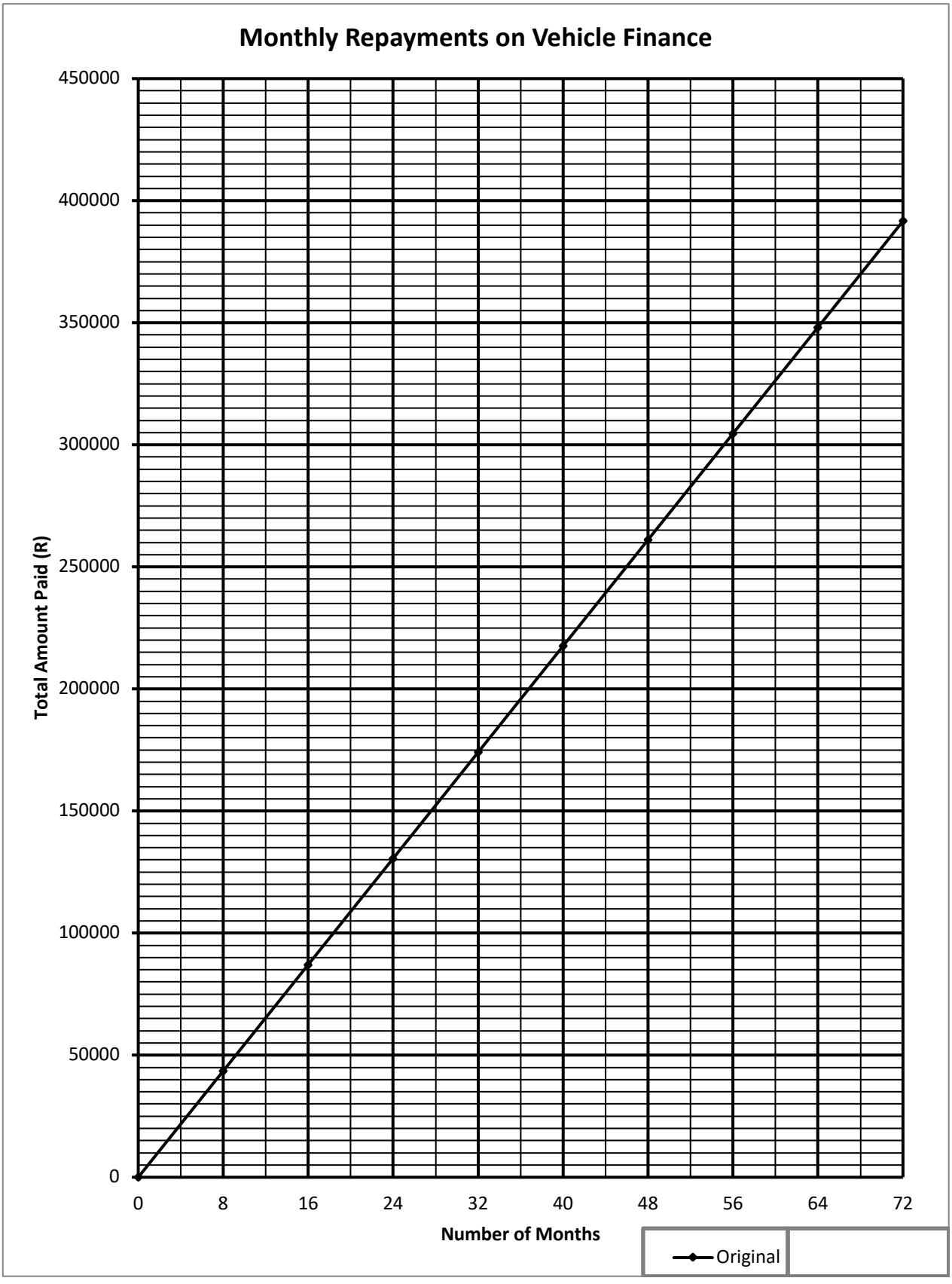
    What would you advice Martin to do?

    Can your argument be applied to the financing of items other than cars? (3)

TOTAL: 50

ANNEXURE A

NAME: _____ **GRADE: _____**



ANNEXURE B

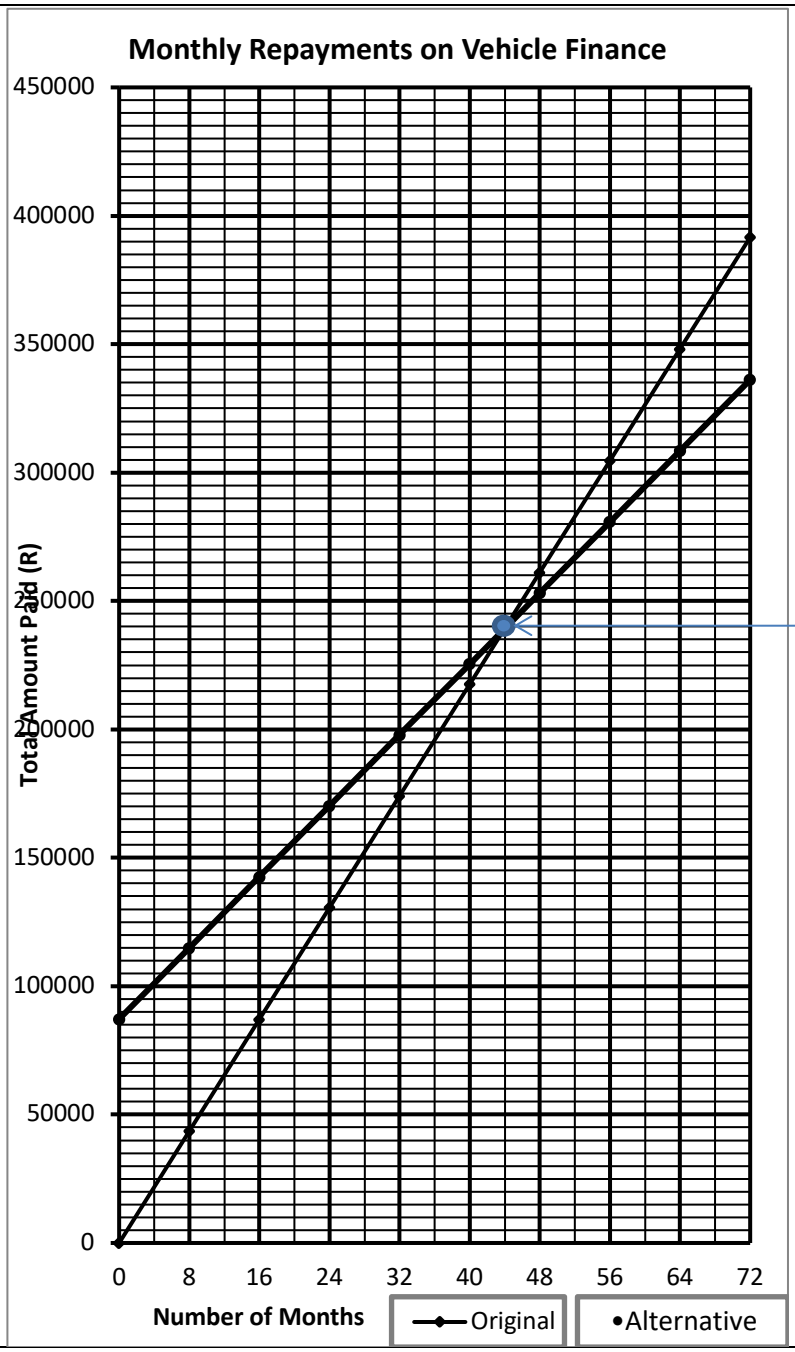
NAME: _____ **GRADE: _____**

Number of Months	0	8	16	24	32	40	48	56	64	72
Total Amount Repaid (R)			**142 523,60**			**225 494,00**			**308 464,40**	

MATHEMATICAL LITERACY
GRADE 12 INVESTIGATION
2022 TERM 1
MARKING GUIDELINES

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT	Reading from a table/a graph/document/diagram
SF	Correct substitution in a formula
O	Opinion/Explanation
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding off
NPR	No penalty for rounding
AO	Answer only
MCA	Method with constant accuracy

<table>
<tr><th>Q</th><th>Solution</th><th>Explanation</th></tr>
<tr><td>1</td><td>At the start of the application no amount is paid. ✓✓</td><td>1O start
1O no amount
(2)</td></tr>
<tr><td>2</td><td>Learner's own opinion. ✓✓
[This question aims to gain learner's insight into the purpose of this investigation.]</td><td>2O some sense
(2)</td></tr>
<tr><td>3
3.1</td><td>R 5 439,36 ✓✓</td><td>2A R 5 439,36
(2)</td></tr>
<tr><td>3.2</td><td>R 54 393,60 ✓✓</td><td>2A R 54 393,60
(2)</td></tr>
<tr><td>3.3</td><td>R 195 816,96 ✓✓</td><td>2A R 195 816,96
(2)</td></tr>
<tr><td>4</td><td>Total Repaid = 5439,36 x number of months ✓✓</td><td>2A formula
(2)</td></tr>
<tr><td>5</td><td>R 391 633,92 ✓✓</td><td>2A R 391 633,92
(2)</td></tr>
<tr><td>6</td><td>Deposit = $\frac{30,6}{100} \times 350000$ ✓
= R 87 210,00 ✓</td><td>1M multiplication
1A R 87 210,00
(2)</td></tr>
<tr><td>7</td><td>Amount = 5439,36 – 3457,10 ✓
= R 1 982,26 ✓</td><td>1M difference
1A R 1 982,26
(2)</td></tr>
<tr><td>8</td><td>
<table>
<tr><td>Number of Months</td><td>0</td><td>8</td><td>16</td><td>24</td><td>32</td><td>40</td><td>48</td><td>56</td><td>64</td><td>72</td></tr>
<tr><td>Total Amount Repaid (R)</td><td>87210.00</td><td>114866.80</td><td>142523.60</td><td>170180.40</td><td>197837.20</td><td>225494.00</td><td>253150.80</td><td>280807.60</td><td>308464.40</td><td>336121.20</td></tr>
</table>
</td><td>1A 87210.00 & 114866.80
1A 170180.40 & 197837.20
1A 253150.80 & 280807.60
1A 336121.20
(4)</td></tr>
</table>

9	Total Repayed amount = 87210 + 3457,10 x number of months ✓✓✓	1A 87210 + 1A 3457,10 x number 1A complete formula (3)
10		1A start 1A end 1A points 1 - 3 1A points 4 – 6 1A points 7 - 9 1A break-even point (6)
11	Point where total repayment and number of months are exatly the same for both options. ✓✓	2O description (2)
12	Number of months = 44 ✓✓ Total reapayed amount = 239322,4 = 240000 ✓✓ Hence (44; 240000) ACCEPT APPROXIMATION WITHOUR REASONABLE BOUNDARIES.	2A 44 months 2A R240000 (4)

13 13.1	Original ✓✓	2A option (2)
13.2	Both ✓✓	2A option (2)
13.3	Alternative ✓✓	2A option (2)
14 14.1	Interest = total paid over months – price = 391 633,92 – 285 000 ✓ = R 106 633,92 ✓	1M subtraction 1A R 106 633,92 (2)
14.2	Interest = total paid over months – price = 336121,20 – 285 000 = R 51 121,20	1M subtraction 1A R 51 121,20 (2)
15	Paying a deposit lowers the amount of interest that is eventually paid. The monthly repayment amount is therefore decreased. Would advice Martin to take the alternative option, if he is by means to do so. The principle can be applied to all purchases made by means of a loan.	1O lower interest 1O alternative 1O wide principle (3)

TOTAL: 50

TAXONOMY LEVELS					
GRADE 12					
MATHEMATICAL LITERACY					
INVESTIGATION - TERM 1 - 2022					
MARKS: 50					
QUESTION	**KNOWLEDGE**	**ROUTINE PROCEDURES**	**COMPLEX PROCEDURES**	**PROBLEM SOLVING**	**TOTAL**
DESIRED %	**30%**	**30%**	**20%**	**20%**	**100%**
1	2				2
2	2				2
3.1	2				2
3.2	2				2
3.3	2				2
4			2		2
5	2				2
6		2			2
7		2			2
8				4	4
9				3	3
10			6		6
11	2				2
12		4			4
13.1		2			2
13.2		2			2
13.3		2			2
14.1			2		2
14.2			2		2
15				3	3
Total	**14**	**14**	**12**	**10**	**50**
Actual %	**28,0**	**28,0**	**24,0**	**20,0**	**100,0**
Desired %	**30%**	**30%**	**20%**	**20%**	**100**