



**LIMPOPO**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF  
**EDUCATION**

**VHEMBE EAST DISTRICT**  
**MATHEMATICAL LITERACY**  
**GRADE 10 INVESTIGATION**  
**TERM 1**

**DUE DATE- 27/02/2023**

**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: \_\_\_\_\_

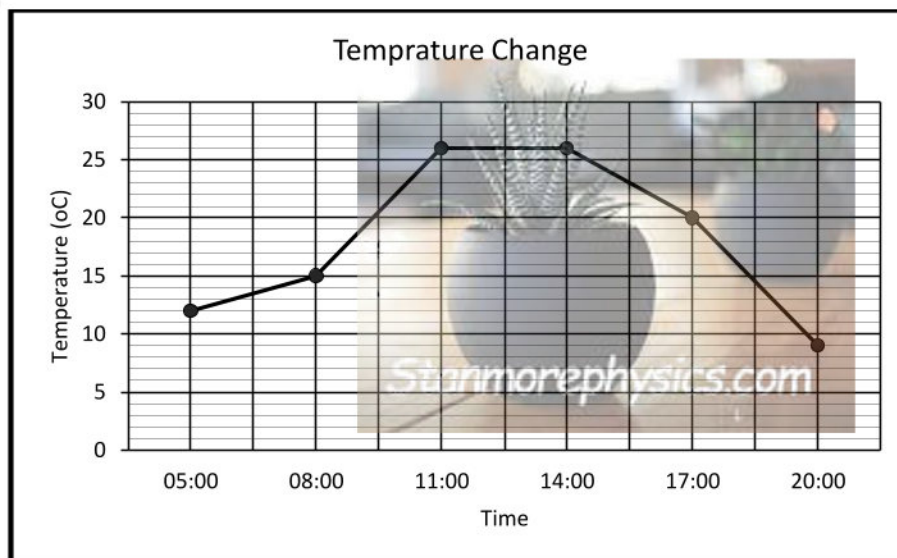
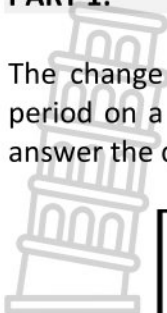
## INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This INVESTIGATION consists of TWO PARTS.
  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.
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**PART 1: RELATIONSHIP BETWEEN TIME AND TEMPERATURE**

The change in temperature of a small town was recorded for a specific time period on a particular day. Study the graph representing the temperatures and answer the questions that follow.



- 1.1 Identify the type of graph shown. (2)
- 1.2 At what time was the first temperature recorded? (2)
- 1.3 When was the lowest temperature recorded? (2)
- 1.4 In intervals of how many hours were recordings made? (2)
- 1.5 During which times did the temperature decrease? (2)
- 1.6 In which time interval did the temperature increase at the highest rate? Motivate your answer by referring to the graph. (3)
- 1.7 Explain what happens to the temperature between 11:00 and 14:00. (2)
- 1.8 With how many degrees Celsius did the temperature increase from 05:00 to 08:00? (2)
- 1.9 Suppose the temperature keeps on decreasing from 20:00 and reaches  $-3^{\circ}\text{C}$  after some time, with how many degrees did the temperature decrease? (3)
- 1.10 Is there any observable pattern in the change in temperature? Explain your answer. (3)

[23]

**PART 2: PETROL CONSUMPTION VERSUS TRAVEL DISTANCE (OBSERVABLE PATTERN)**

Mr. Flynn found that his car can drive 12,5km for every litre of petrol it consumes. This helps him to be sure that he has enough petrol when driving certain distances – due to the nature of his work. The table below represents the car's petrol consumption. The extreme petrol price per litre of R22,50 also impacts Mr. Flynn's travelling. Study the table and answer the questions that follow.


**TABLE 1: DISTANCE TRAVELLED PER LITRE PETROL CONSUMED**

<b>Litres of Petrol</b>	0	1	2	3	B	5	6	7	8
<b>Distance to Travel (km)</b>	A	12,5	25,0	37,5	50,0	62,5	C	87,5	100

- 2.1 Describe the general relationship between litres of petrol consumed and distance travelled. (2)
- 2.2 Determine the number of litres of petrol consumed when 12 500 metres was travelled. (2)
- 2.3 How many litres of petrol is consumed to travel  $37\frac{1}{2}$ km? (2)
- 2.4 What distance was travelled when 8 litres of petrol was consumed? (2)
- 2.5 Determine the value of:
- 2.5.1 A (2)
- 2.5.2 B (2)
- 2.5.3 C. (2)
- 2.6 Determine the cost of driving 100km. (3)
- 2.7 One of Mr. Flynn's trips required him to drive a distance of 97km to a neighbouring town and back.
- Determine the total cost of petrol? (5)
- 2.8 On another trip Mr. Flynn's petrol expenses were R1 224,00.
- Determine the distance travelled. (5)

**[27]**

**TOTAL: 50**



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GRADE 10      INVESTIGATION

2023    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

**PART 1 [23]**

Q	Solution	Explanation
1.1	Broken line graph OR Line graph ✓✓	2A line (2)
1.2	05:00 ✓✓	2A 05:00 (2)
1.3	20:00 ✓✓	2A 20:00 (2)
1.4	3 hours ✓✓	2A 3 hours (2)
1.5	From 14:00 to 20:00 ✓✓	2A correct interval (2)
1.6	08:00 to 11:00 ✓✓ The increasing line is steeper. ✓	2A correct interval 1A motivation (3)
1.7	The temperature remains constant. ✓✓	2A constant (2)
1.8	3 °C ✓✓	2A increase (2)
1.9	Decrease $9^{\circ}\text{C} - (-3^{\circ}\text{C})$ ✓ $= 11^{\circ}\text{C}$ ✓	1M subtraction 1A $-3^{\circ}\text{C}$ 1A $11^{\circ}\text{C}$ (3)
1.10	Yes. ✓ The temperature increases from the morning up until noon, and decreases in the afternoon. ✓✓	1A yes 2O pattern (3)

[23]

**PART 2 [27]**

Q	Solution	Explanation
2.1	The greater the distance travelled, the higher the petrol consumption. ✓✓	2A relationship (2)
2.2	12 500m = 12,5km ✓ Hence 1 litre ✓	1C to km 1RT 1 litre (2)
2.3	37,5km Hence 3 litres ✓✓	2RT 3 litres (2)
2.4	100km ✓✓	2RT 100km (2)
2.5		
2.5.1	A = 0km ✓✓	2RT 0km (2)
2.5.2	B = 4 litres ✓✓	2A 4 litres

		(2)
2.5.3	$C = 75\text{km} \checkmark \checkmark$	2A 75km (2)
2.6	Cost = $8 \checkmark \times R22,50 \checkmark$ = R180,00 $\checkmark$	1RT 8 litres 1M multiply by R22.50 1CA R180,00 (3)
2.7	Distance = $2(97\text{km})$ = 194km $\checkmark$  Litres = $194\text{km} \div 12,5\text{km} \checkmark$ = 15,52 litres $\checkmark$  Cost = $15,52 \times R22,50 \checkmark$ = R349,20 $\checkmark$	1A distance  1M division 1CA 15,52 litres  1MCA multiplication 1CA R349,20 (5)
2.8	Litres = $R1\ 224,00 \div R22,50 \checkmark$ = 54,4 litres $\checkmark$  Distance = $54,4 \times 12,5\text{km} \checkmark$ = 680 $\checkmark$ km $\checkmark$	1M division 1A 54,4 litres  1M multiplication 1A 680 1A unit (5)

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TOTAL: 50

TAXONOMY LEVELS

GRADE 10					
MATHEMATICAL LITERACY					
INVESTIGATION - TERM 1 - 2023					
MARKS: 50					
QUESTION	KNOWLEDGE	ROUTINE PROCEDURES	COMPLEX PROCEDURES	PROBLEM SOLVING	TOTAL
DESIRED %	30%	30%	20%	20%	100%
1.1	2				2
1.2	2				2
1.3	2				2
1.4	2				2
1.5		2			2
1.6			3		3
1.7		2			2
1.8		2			2
1.9			3		3
1.10		3			3
					0
2.1		2			2
2.2	2				2
2.3		2			2
2.4		2			2
2.5.1	2				2
2.5.2	2				2
2.5.3		2			2
2.6			3		3
2.7				5	5
2.8				5	5
<b>Total</b>	<b>14</b>	<b>17</b>	<b>9</b>	<b>10</b>	<b>50</b>
<b>Actual %</b>	<b>28,0</b>	<b>34,0</b>	<b>18,0</b>	<b>20,0</b>	<b>100,0</b>
<b>Desired %</b>	<b>30%</b>	<b>30%</b>	<b>20%</b>	<b>20%</b>	<b>100</b>