Province of the
EASTERN CAPE
EDUCATION

O.R TAMBO
INLAND DISTRICT

GRADE 10

MATHEMATICAL LITERACY

CONTROLLED TEST

SEPTEMBER 2022

MARKS: 50   **TIME: 1 HOUR**

Instructions

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

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

3. You may use an approved calculator (non-programmable and nongraphical), unless stated otherwise

4. Show ALL the calculations clearly.

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

6. Diagrams are NOT necessarily drawn to scale

7. Write neatly and legibly.

This question paper consists of 5 pages, including cover page.

QUESTION 1

The Lethabo family has drawn up an income and expenditure statement for the month of July study the statement and answer the question that follow.

| Income	Amount	Expenses	Amount
Mr Lethabo's salary	R22 000	Bond repayments	R14 850
Mrs Lethabo's salary	R18 000	School fees	R8 000
Rent from cottage	R5 000	Cell phone contracts	R1 280
Mr Lethabo's mid-year bonus	R14 000	Medical aid	R3 230
		Car repayments	R8 400
		Car insurance	R1 700
		Groceries	R3 200
		Petrol	R2 700
		Internet	R800
		Water and electricity	R3 850
		Cell phone screen repair	R2 000
		Entertainment	R2 400
		Retirement fund	R6 400
Total	**A**	**Total**	**B**

1.1   Explain the difference between fixed and variable expenditure, using examples   (4)

1.2   Identify any occasional expenses?   (2)

1.3   Determine the couple's salaries as a simplified ratio.   (2)

1.4   Calculate the family's total income (value **A**) and expenditure (value **B**) for July.   (4)

1.5   Mr Lethabo claims that in July they had a deficit. Verify whether the family has a deficit according to Mr Lethabo's statement.   (3)

1.6   Explain why Mr Lethabo's family will have a deficit in August.   (2)

[17]

QUESTION 2

Amy decides to start a business sewing PacMan decals on a square cushion (as shown below). The radius of PacMan's mouth is 10 cm.
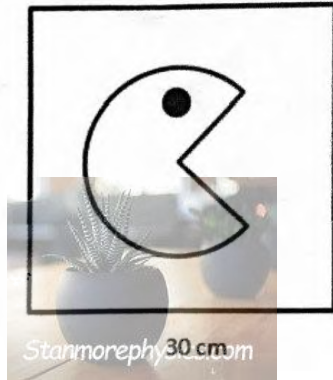
The following formulae may be used.

$$Circumference = \pi \times d$$

$$Area\ of\ square = l \times l$$
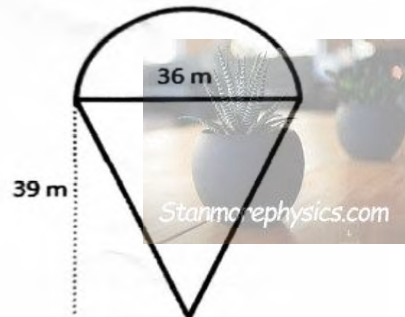
$$Area\ of\ a\ circle = \pi \times r^2$$

$$\pi = 3.142$$

2.1 Amy will use black piping around PacMan's face. Calculate the length of black piping she will need, rounded to 1 decimal place. (3)

2.2 The area of PacMan's eye is 12.6 cm^2 (rounded to 1 decimal place). Amy will use yellow material for the face. Calculate the amount of yellow material needed to crate his face, excluding the eye, in cm^2. Round your answer to 1 decimal place. (4)

[7]

QUESTION 3

A new playground is going to be built in a nursery school. One end is a triangle and the other end a semi-circle. The plan is below.

The following formulae may be used.

$$Area\ of\ a\ circle = \pi \times r^2 \qquad Area\ of\ a\ triangle = \frac{1}{2} \times b \times h$$

$$Circumference\ of\ a\ circle = 2 \times \pi \times r, \ \pi = 3.142$$

3.1   Calculate the total area of the playground, rounded to the nearest whole number. (6)

3.2   The playground will have a concrete surface. The concrete surface costs R98/m^2. Calculate the cost of covering the playground in concrete. (2)

3.3   The cost of building the playground, including concrete and astro turf surface, is R234 568. The school needs to purchase equipment which cost R53 478 and paint which costs R12 368. The cost of labour is 30% of the equipment cost. Calculate the total cost to complete the new playground. (3)

3.4   The school board decides that a fence must be built around the playground. The straight sides of the playground are each 43 m long.

The school has been presented with two options.

OPTION 1

Poles must be placed at 3 m intervals to build the fence. The poles cost R125 each.
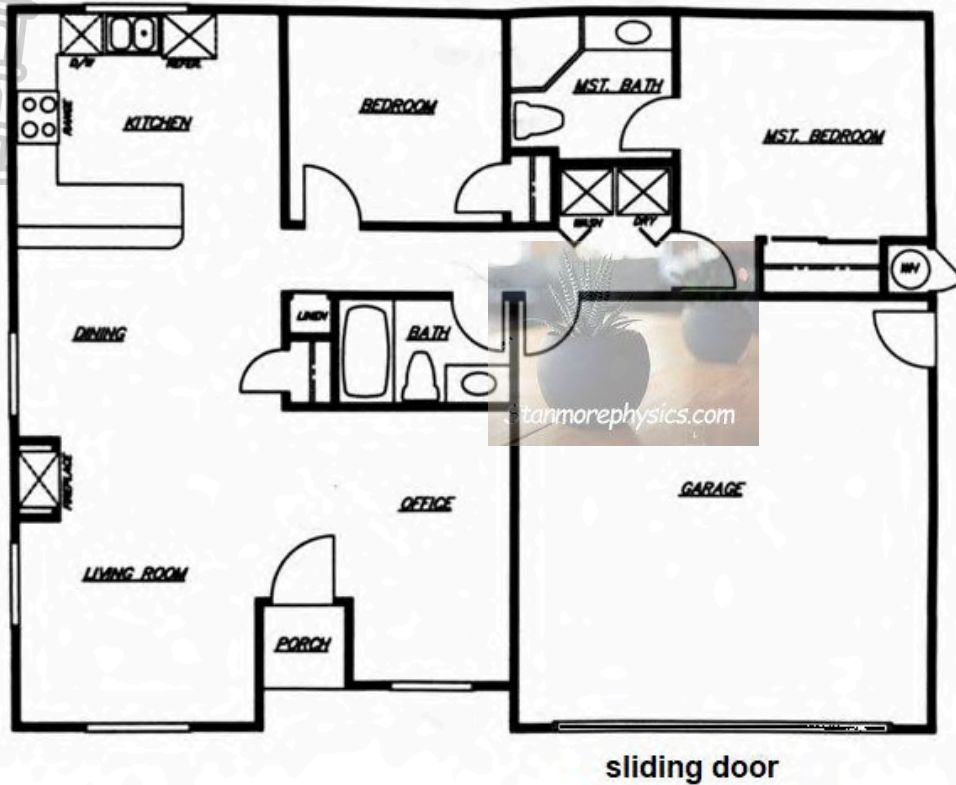
OPTION 2

The school could purchase larger, stronger poles which will be placed 4,5m apart. They cost R175 each. (7)

Which option should the school choose? Explain why.

[18]

QUESTION 4

Study the floor plan below and answer the questions that follow.

4.1 How many windows are there on this plan? (2)

4.2 How many interior doors are in the house? (2)

4.3 If someone would want to take a shower in this house, which room must the person use? (2)

4.4 If you were to walk from the office to the kitchen, how many doors would you go through? (2)

[8]

Total marks [50]

Province of the EASTERN CAPE EDUCATION

O.R TAMBO

INLAND DISTRICT

GRADE 10

MATHEMATICAL LITERACY
CONTROLLED TEST
MEMORANDUM

Stanmorephysics.com

SEPTEMBER 2022

MARKS: 50

Codes	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification / Reason / Explain
S	Simplification
RT / RD / RG	Reading from a table OR a graph OR a diagram OR a map OR a plan
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty, for no units, incorrect rounding-off, etc.
R	Rounding-off
NP	No penalty for rounding-off OR omitting units

This Memorandum consists of 4 pages including the cover page and grid analysis.

Mathematical literacy   (ORTI Term 2 MEMO)

QUESTION 1 [17 MARKS]				
No.	**Solution**	**Mark**	**Explanation**	**Level**
1.1	Fixed expenses are those that do not change and must be paid regularly ✓ such as monthly bond repayments. ✓ Variable expenses are regular but the value changes✓, such as electricity accounts. ✓	4	1 O 1 E 1 O 1 E	1
1.2	cell phone screen repair✓✓	2	2 A	1
1.3	22 000 : 18 000 $\frac{22\,000}{2\,000} : \frac{18\,000}{2\,000}$✓ 11 : 9✓	2	1 S 1 A	2
1.4	Income/ Value A: 22 000+18 000+5 000+14 000✓ = R59 000✓ Expenditure/ Value B: 14 850+8000+1 280+3 230+ 8 400+ 1700+ 3200+2700+800+3850+2000+2400+6400✓=R58 810✓	4	1 Addition 1 A 1 Addition 1 A	2
1.5	59 000- 58 810✓= R190✓ They have made a surplus of R190 Statement not valid✓	3	1 S 1 A 1 O	3
1.6	In August they will not receive midyear bonus of R14 000 ✓✓	2	2 O	4
QUESTION 2 [7 MARKS]				
2.1	$d = 20cm\ (r = 10cm)$ $c = \pi \times d \times \dfrac{3}{4}$ $c = 3.142 \times 20 \times \dfrac{3}{4}$✓ $c = 47{,}13$ $c \approx 47{,}1cm$✓ $47.1 + 10 + 10 = 67.1\ cm$✓	3	1 M 1 A 1 CA	2
2.2	$A = \pi \times r^2 \times \dfrac{3}{4}$ $A = 3.142 \times 10^2 \times \dfrac{3}{4}$✓ $A = 235{,}65 \approx 235{,}7cm^2$✓ $235{,}7 - 12{,}6$✓ $= 223{,}1\ cm^2$✓	4	1 M 1 A 1 W 1A	2

1

QUESTION 3 [18 MARKS]				
3.1	r =18m (d=36m) ✓ $$A = \pi \times r^2 \times \frac{1}{2}$$ $$A = 3.142 \times 18^2 \times \frac{1}{2}✓$$ $$A = 509{,}004✓$$ $$A \approx 509m^2$$ $$A = \frac{1}{2} \times b \times h$$ $$A = \frac{1}{2} \times 36 \times 39✓$$ $$A = 702m^2✓$$ $$509 + 702 = 1\ 211m^2✓$$	6	1 C 1 M 1 RA 1 A 1 M 1 A	3
3.2	1 211× R98✓ = R118 678✓	2	1 M 1 RA	1
3.3	Cost of labour = 0,3 x R53 478 = RR16 043,40 234 568+ 53 478+ 12 368+ 16 043,40 = R316 457,40	3	1 W 1 A	2
3.4	$$C = 2 \times \pi \times r \times \frac{1}{2}$$ $$C = 2 \times 3{,}142 \times 18 \times \frac{1}{2}$$ $$C = 56{,}556 \approx 57m✓$$ 43+43+57=143 m total perimeter✓ $143 \div 3 = 47{,}6 \approx 48\ poles✓$ $143 \div 4{,}5 = 31{,}77777 \approx 32\ poles✓$ Option 1: $48 \times 125 = R6000\ for\ the\ smaller\ poles✓$ Option 2: $32 \times 175 = R5600\ for\ the\ larger\ poles✓$ They should choose Option 2 it is cheaper. ✓	7	1 M 1 A 1 RA 1 M 1A 1 M 1 RA	4

Mathematical literacy   (ORTI Term 2 MEMO)

QUESTION 4 [8 MARKS]					
4.1	5 windows	2	2 A	1	
4.2	7 doors	2	2 A	1	
4.3	master bathroom / master bathroom	2	2 A	2	
4.4	0 doors	2	2 A	2	

TAXONOMY LEVELS					
GRADE 10					
MATHEMATICAL LITERACY					
Controlled Test : TERM 3 – 2022					
MARKS: 50					
QUESTION	KNOWLEDGE	ROUTINE PROCEDURES	COMPLEX PROCEDURES	PROBLEM SOLVING	TOTAL
1.1	4				4
1.2	2				2
1.3	2				2
1.4		4			4
1.5			3		3
1.6				2	2
2.1		3			3
2.2	2	2			4
3.1			6		6
3.2	2				2
3.3		3			3
3.4				7	7
4.1	2				2
4.2	2				2
4.3		2			2
4.4		2			2
Total	16	16	9	9	50
Actual %	32,0	32,0	18,0	18,0	100,0
Desired %	30%	30%	20%	20%	100