education

Department of Education
FREE STATE PROVINCE

MID-YEAR EXAMINATION

GRADE 12

MATHEMATICAL LITERACY P2

MARKING GUIDELINE

JUNE 2023

MARKS: 100

Symbol/*Simbool*	**Explanation/*Verduideliking***
M	Method/*Metode*
M/A	Method with accuracy/*Metode van akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/graph/diagram/*Lees vanaf tabel/grafiek/diagram*
SF	Correct substitution in a formula/*Korrekte vervanging in formule*
O	Opinion/Example/Definition/Explanation/*Opinie/Voorbeeld/Definisie/Verduideliking*
P	Penalty, e.g., for no units, incorrect rounding off, etc./*Penalisasie, bv. vir geen eenhede/verkeerde afronding ens.*
R	Rounding off/*afronding*
NPR	No penalty for correct rounding/*Geen penalisering vir korrekte afronding nie*
NPU	No penalty for the units/*Geen penalisering vir eenhede nie*
AO	Answer only, if correct, full marks/*Slegs antwoord, indien korrek, volpunte*
MCA	Method with consistent accuracy/*Metode met volgehoue akkuraatheid*

This marking guideline consists of 13 pages

Copyright reserved

NOTE:

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution, mark the crossed out (cancelled) version.
- Consistent accuracy (CA) applies in ALL aspects of the marking guidelines; however, it stops at the second calculation error.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- Rounding is an independent mark.
- General principal of marking: If the candidate makes one mistake, he/she loses one mark.
- A conclusion mark can only be given if relevant calculations precede it.

QUESTION 1 [20MARKS]		**ANSWER ONLY FULL MARKS**	
	Solution	**Explanation**	**T/L**
1.1.1	Layout Plan	2A correct map/plan	MP L1 E
1.1.2	To borrow/return books✓✓O **OR** To read books✓✓O **OR** To study/use the internet/to do research✓✓O **OR** To access the computer ✓✓O **Any acceptable answer – must be related to library**	2A correct purpose (2)	MP L1 M
1.1.3	Eastern Cape/EC ✓✓A	2A correct province (2)	MP L1 E
1.1.4	**P** ✓✓A **Accept** P	2A correct symbol (2)	MP L1 E
1.1.5	3/Three✓✓A	2A correct number (2)	MP L1 E

	Solution	Explanation	T/L
1.2.1	Picture 1 = 12- hour ✓ A Picture 2 = 24- hour ✓A **Accept** Picture 1 = Analogue ✓ A Picture 2 = Digital✓ A	1A 1st format 1A 2nd format (2)	M L1 E
1.2.2	✓A ✓A Sixteen minutes to six in the morning. **Accept** ✓A ✓A Forty-four minutes past five in the morning.	1A correct time 1A in the morning (2)	M L1 E
1.2.3	Time in hours = $13h + \frac{57}{60}$ ✓A $= 13h + 0,95h$ $= 13,95h$ ✓A	1C dividing by 60 1A correct hours	M L1 M
1.3.1	The line that divides the circular bottom of the can into two equal parts.✓✓O **OR** A straight line passing from one side to the other side through the centre of the can. ✓✓O	2O correct explanation	M L1 E
1.3.2	B/ Circumference = $2 \times \pi \times$ radius✓✓O	2A correct formulae (2)	

QUESTION 2 [22 MARKS]			
Item	**Solution**	**Explanation**	**T/L**
2.1	Oudtshoorn ✓✓O Mossel Bay ✓✓O	2A first town 2A second town (4)	MP L1 M
2.2	0% ✓✓A **0 only (1 mark)**	2A correct percentage (2)	MP L2 E
2.3	9/Nine✓✓A	2A correct number (2)	MP L1 E
2.4	Bar/Line/Linear scale/graphic scale✓✓A	2A correct scale (2)	MP L1 E
2.5	Jenny is not correct ✓O The most eastern town is Harrismith ✓✓O	1O opinion 2o correct reason (3)	MP L4 E
2.6	Bar scale distance = 20mm ✓A 20 mm = 300 km ✓MCA 20mm = 300 × 1 000 000✓C 1mm = $\frac{300\ 000\ 000}{20}$ = 15 000 000✓S Scale is 1: 15 000 000✓CA	1A correct measurement 1MCA concept of scale in the correct order 1C converting km to mm 1S correct simplification 1CA scale/format (5)	MP L3 M

2.6	**OR** Bar scale distance = 2cm✓A 2 cm = 300 km ✓MCA 2 cm = 300 × 100 000✓C 1mm = $\frac{30\ 000\ 000}{2}$ = 15 000 000✓S Scale is 1: 15 000 000✓CA **NB: Check if learners are working with 100 km or 50km for full marks.**	1A correct measurement 1MCA correct concept of scale in the correct order 1C converting km to cm 1S correct simplification 1CA scale/format (5)	
2.7	Southwest / SW ✓✓A	2A correct direction (2)	MP L2 M
2.8	Lesotho ✓✓A	2A correct country (2)	MP L2 E

QUESTION 3 [27 MARKS]			
Item	**Solution**	**Explanation**	**T/L**
3.1.1	Number of stickers = 6 × 9 ✓MA = 54 ✓A	1MA multiplying correct values 1A correct answer **AO** (2)	M L2 E
3.1.2	Perimeter = S + S + S + S = 57mm + 57mm + 57mm + 57mm ✓SF = 228 mm✓A **OR** Perimeter = 4 S = 4 × 57mm✓SF = 228 mm✓A	1SF correct substitution 1A simplification **OR** 1SF correct substitution 1A simplification **NPU** **AO** (2)	M L2 E
3.1.3	Radius = $\frac{67\ mm}{2}$ = 33,5 mm✓A = 3,35 cm✓C Height = $\frac{60}{10}$ = 6 cm✓C Volume of the cylinder = 3,142 × r^2 × h ✓SF = 3,142 × 3,35 cm^2 × 6 cm = 211, 56657 cm^3 Her statement is correct. ✓O	1A calculating the radius 1C converting radius 1C converting height 1SF substitution 1O opinion	M L4 D

	OR Radius = $\frac{6,7\text{ cm}}{2}$ ✓C = 3,35 cm✓A Height = $\frac{60}{10}$ = 6 cm ✓C Volume of the cylinder = 3,142 × r^2 × h ✓SF = 3,142 × 3,35 cm^2 × 6 cm = 211, 56657 cm^3 Her statement is correct. ✓O **OR** Radius = $\frac{67\text{ mm}}{2}$ = 33,5 mm✓A Volume of the cylinder = 3,142 × r^2 × h ✓SF = 3,142 × 33,5 mm^2 × 60 mm ✓CA = 211 566,57 ÷ 1 000 ✓C = 211,56657 Her statement is correct.✓O	**OR** 1C converting radius 1A calculating radius 1C converting height 1SF substitution 1O opinion 1A calculating radius 1SF substitution 1CA simplification 1C conversion 1O conclusion (5)	

3.1.4	Total surface area of the square = 6 (S × S) ✓SF = 6 (57 mm × 57 mm) ✓CA =19 494 mm^2✓U **OR** Total surface area of the square = 6 S^2 ✓SF = 6 × (57 mm)^2 ✓SF ✓CA =19 494 mm^2 ✓U	1SF correct substitution 1CA simplification 1U correct units **OR** 1SF correct substitution 1CA simplification 1U correct units (3)	M L2 M
3.2.1	Area a bedroom = length × breadth = 5 m × 4 m✓SF = 20 m^2✓A Area of the cupboard = length × breadth = 2 m × 1,5 m = 3 m^2 ✓A Area to be tiled = 20 m^2 - 3 m^2✓MA = 17 m^2	1SF correct substitution 1A correct area 1A correct area 1MCA subtracting areas (4)	M L3 M

3.2.2	Area of a tile = 60 cm × 60 cm✓SF = 3 600 cm^2 = $\frac{3\ 600}{10\ 000}$ ✓C = 0,36 m^2 ✓CA Number of tiles = $\frac{17}{0,36}$ ✓MCA = 47,22222222 ✓CA Number of extra tiles = 47,22222222 × 10% ✓MCA = 4,722222222 Total number of tiles needed = 47,22222222 + 4,722222222 = 51, 94444444✓CA Number of boxes needed = $\frac{51,94444444}{4}$ ✓MCA = 12, 98611111 ≈ 13 boxes ✓CA	1 SF substitution 1C converting. 1CA simplification 1MCA dividing converted areas. 1CA simplification 1MCA calculation 10% 1CA simplification 1MCA dividing by 4 1CA rounding up. NP for early rounding (9)	M L3 D
3.2.3	Cost to buy tiles = 13 × R199,90 ✓MCA = R2 598,70 ✓CA	**CA from 3.2.2** 1MCA calculating cost 1CA final answer (2)	M/F L2 E

QUESTION 4 [31 MARKS]			
Item	**Solution**	**Explanation**	**T/L**
4.1.1	4/Four ✓✓A	2A correct number (2)	MP L1 E
4.1.2	A strip chart is not drawn to scale while a road map is drawn to scale. ✓✓A **OR** A strip chart shows the routes as straight line while a road map shows the routes in the winding manner. ✓✓A	2A explanation (2)	MP L1 M
4.1.3	Distance between Port Elizabeth and Pietermaritzburg ✓RT = 964 + 60 ✓MA = 1024 km✓CA	1RT both correct values 1 MA adding correct values. 1CA total kilometres **AO** (3)	MP L2 M
4.1.4	Probability = $\frac{1}{2}$ ✓A × 100 ✓A = 50 % ✓CA	1A numerator 1A denominator 1CA simplified as % **AO** (3)	P L2 M
4.1.5	Stutterheim ✓✓A	2A correct town (2)	MP L2 E

4.2	Stopping time = 30min +45 min + 25 min = 100 min ✓A $= \frac{100}{60}$ = 1 hr 40 min ✓C Travelling time = 11hrs 35 min – 1hr 40 min = 9 hrs 55 min✓CA = 9 hrs + $\frac{55}{60}$ ≈ 9,916666667 hrs✓C Distance = speed × time 964 km = speed × 9,916666667 hrs✓SF Speed = $\frac{964\text{ km}}{9{,}916666667\text{ hrs}}$ ✓S = 97,21 km/h✓CA She is correct. She drove on average less than the national road speed limit of 120 km/h ✓O **OR** Stopping time = 30min +45 min + 25 min = 100 min ✓A Travelling time = 11hrs 35 min – 100 min ✓C = [(11× 60) + 35 min] – 100 min = 595 min✓CA Distance = speed × time 964 km = speed × 595 min✓SF	1A total stopping time. 1C convert to hours. 1CA travelling time. 1C conversion 1SF substitute into formula 1S change of subject of the formula. 1CA simplification 1O verification **OR** 1A total stopping time 1C convert to minutes 1CA travelling time 1SF substitute into formuila	M L4 D

	Speed = $\frac{964\text{ km}}{595\text{ min}}$ ✓S = 1,620168067 km/min = 1,620168067 × 60 min✓C = 97,21 km/h ✓CA She is correct. She drove less than national road speed limit 120 km/h ✓O	1S change of subject of the formula 1C conversion 1CA simplification 1O verification **NPR** (8)	
4.3.1	Fuel Consumption $= \frac{7{,}9\ell/\text{km}}{100\text{km}} \times 964\text{km}$ ✓MA $= 76{,}156\ell$ ✓CA $\approx 76{,}2\ell$ ✓R	1MA multiplying by 964 km 1CA Simplification 1R correct rounding (3)	M L2 M
4.3.2	Petrol cost = $76{,}2\ell \times$ R 22,95 ✓MCA = R1 748,79 ✓CA ≈ R2 000,00 ✓R	**CA from Question 4.3.1** 1MCA multiplying by fuel consumption. 1CA Simplification 1R rounding (3)	M/F L2 M
4.4	From Durban to Port Shepstone using N2 = 280 km ✓RT From Port Shepstone to Port St Johns using R61: ✓MA 14km +36km + 201 km = 251 km✓CA 280 km – 251 km = 29 km ✓CA Rethabile is not correct✓O	1RT 280 km 1MA adding all three correct values 1CA simplify 1CA subtract and answer 1O correct opinion (5)	L4 MP M

Grade 12 Mid-year Exam.

MATHEMATICAL LITERACY P2 ANALYSIS GRID JUNE 2023

	L1	L2	L3	L4	MP	M	P	E	M	D
1.1.1	2				2			2		
1.1.2	2				2			2		
1.1.3	2				2			2		
1.1.4	2				2			2		
1.1.5	2				2				2	
1.2.1	2					2		2		
1.2.2	2					2		2		
1.2.3	2					2			2	
1.3.1	2					2		2		
1.3.2	2					2		2		
2.1	4				4			4		
2.2		2					2	2		
2.3	2				2			2		
2.4	2				2			2		
2.5				3	3			3		
2.6			5		5				5	
2.7		2			2				2	
2.8		2			2			2		
3.1.1		2				2			2	
3.1.2		2				2		2		
3.1.3				5		5			5	
3.1.4		3				3			3	
3.2.1			4			4			4	
3.2.2			9			9				9
3.2.3		2				2		2		
4.1.1	2				2			2		
4.1.2	2				2				2	
4.1.3		3				3			2	
4.1.4		3					3		2	
4.1.5		2			2			2		
4.2				8		8				8
4.3.1		3				3			3	
4.3.2		3				3			3	
4.4				5	5				5	
	32	29	18	21	41	54	5	39	42	17
Target	**30**	**30**	**20**	**20**	**40**	**55**	**5**	**40**	**40**	**20**

Copyright reserved