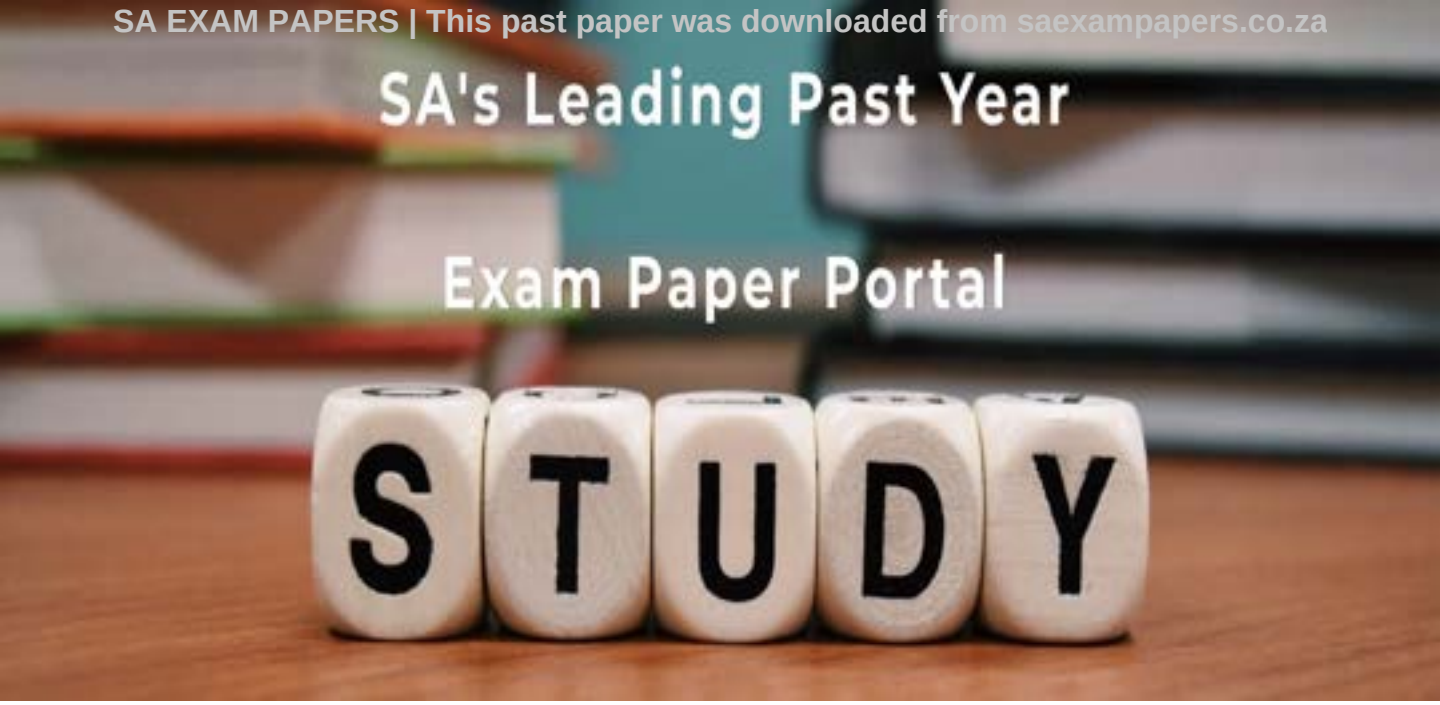

Province of the EASTERN CAPE EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2024

MATHEMATICAL LITERACY P2 MARKING GUIDELINES

MARKS: 150

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

This marking guidelines consist of 12 pages.

MARKING GUIDELINES

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 incorrect item presented.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE keer beantwoord, merk slegs die EERSTE poging.*
- *As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanseleer) en nie oordoen nie, merk die doodgetrekte (gekanseleerde) poging.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, maar dit hou by die tweede berekeningsfout op.*
- *Wanneer 'n kandidaat aflees van 'n grafiek, tabel, uitlegplan, en kaart en ekstra antwoorde gee, penaliseer vir elke ekstra verkeerde item.*

KEY TO TOPIC SYMBOL:
F = Finance; M = Measurement; MP = Maps, Plans and Other representations; P = Probability

QUESTION 1 [28 MARKS] **ANSWER ONLY FULL MARKS**

Ques.	Solution	Explanation	Level
1.1.1	Volume of heavy whipping cream = $\frac{125}{1\,000}$ ✓M = 0,125 litres ✓A	1M divide by 1000 1A answer (2)	M L1
1.1.2	Grams of cocoa powder needed for 12 people = $\frac{50}{4} \times 12$ ✓MA = 150 g ✓A **OR** Grams of cocoa powder needed for 12 people = $\frac{12}{4} \times 50$ ✓MA = 150 g ✓A	1MA divide by 4 and multiply by 12 1A answer **OR** 1MA divide by 4 and multiply by 50 1A answer (2)	M L1
1.1.3	Total time = (15 min + 6 min) = 21 min × 2 ✓MA = 42 minutes ✓A	1MA adding time and multiply by 2 1A answer (2)	M L1
1.1.4	Time = 12:05 = 0:21 (prep. and cooking) = 1:00 (chilling) ✓M = 10:44 ✓A	1M subtracting both times 1A correct time (2)	M L1
1.2.1	A **OR** Word Scale ✓A **AND** C **OR** Ratio Scale ✓A	1A first scale 1A second scale (2)	MP L1
1.2.2	Winburg ✓✓A	2A correct town (2)	MP L1
1.2.3	4 national roads ✓✓RT	2RT number of national roads (2)	MP L1
1.2.4	Edenburg ✓✓RT	2RT correct town (2)	MP L1
1.3.1	Radius = 132 ÷ 2 ✓M = 66 cm ✓A	1M divide by 2 1A correct radius (2)	M L1

1.3.2	Total number of tanks = 920 × 2 ✓MA = 1 840 ✓A	1MA multiply correct values 1A number of tanks (2)	M L1
1.3.3	B ✓✓A **OR** cubic metres ✓✓A	2A correct unit (2)	M L1
1.3.4	The diameter is the distance from one side of the circle to the other side of the circle, through the centre of the circle. ✓✓A	2A definition (2)	M L1
1.4.1	Number of days = 5 ✓✓A **(Accept 4 days = 1 Mark)**	2A correct number of days (2)	M L1
1.4.2	Year born = 2024 – 57 ✓M = 1967 ✓A	1M subtracting 57 from 2024 1A correct year (2)	M L1
		[28]	

QUESTION 2 [34 MARKS]			
Ques.	**Solution**	**Explanation**	**Level**
2.1.1	National Roads ✓✓A	2A correct road (2)	MP L1
2.1.2	Northeast **OR** NE ✓✓A	2A correct direction (2)	MP L1
2.1.3	Eastern Cape ✓✓A	2A correct province (2)	MP L2
2.1.4	Speed $= \frac{\text{Distance}}{\text{Time}}$ 120 km/h $= \frac{614{,}6\text{ km}}{\text{Time}}$ ✓SF Time $= \frac{614{,}6\text{ km}}{120\text{ km/h}}$ ✓MA = 5,121666667 hours 0,12166… × 60 = 7,3 minutes ✓C Time taken to reach Vryheid = 5 hours and 7,3 minutes✓CA **(Accept 5 hours and 7 minutes)**	1SF substitution 1MA change subject and answer 1C hours to minutes 1CA total time (4)	MP L3
2.2.1	• From the Free State, drive on the N3 till she reaches Pietermaritzburg. ✓O • Pass Pietermaritzburg and turn left onto the N2. Continue driving on the N2 till she passes Richard's Bay, turn left and pass Empangeni. ✓O • Continue on the road from Empangeni until she reaches Eshowe. ✓O **(Accept any other relevant explanation.)**	1O N3 1O left on N2 and passing Richard's Bay and Empangeni 1O continue to Eshowe from Empangeni (3)	MP L4
2.2.2	Number of litres of petrol $= \frac{5{,}9}{100} \times 614{,}9\ l$ ✓MA = 36,2614 × 2 ✓M = 72,5228 ≈ 72,523 litres ✓CA **(Accept 72,5 OR 72,52)**	1MA dividing correct values and multiply by 614,9 1M multiply by 2 1CA number of litres **NPR** (3)	
2.2.3	Petrol cost = 72,523 litres × R24,45 ✓MCA = R1 773,18735 ≈ R1 773,19 ✓CA	**CA from 2.2.2** 1MCA multiply by R24,45 1CA answer (2)	F L1

2.3.1	One unit on the map represents 350 units in reality. ✓✓A **OR** ✓✓A One unit on the map equals 350 units on the floor.	2A explanation (2)	MP L1
2.3.2	Elevator ✓✓A **OR** Stairs ✓✓A	2A one correct feature (2)	MP L1
2.3.3	Hata Street entrance ✓✓A	2A correct entrance (2)	MP L1
2.3.4	Number of restrooms = 4 ✓✓A	2A correct number of restrooms (2)	MP L2
2.3.5	Impossible **OR** None **OR** 0 **OR** 0% ✓✓A	2A answer (2)	P L2
2.3.6	34 mm ✓✓A **(Accept 33 – 35 mm)**	2A correct length in mm (2)	MP L1
2.3.7	Actual length = 34 × 350 = 11 900 mm ✓MCA $\therefore = \frac{11\,900}{1\,000}$ ✓C = 11,9 m ✓MCA = 12 m ✓R **(Accept 11,55 m – 12,25 m) and (12 m)**	**CA from 2.3.6** 1MCA multiply with correct scale and answer 1C divide by 1000 1MCA answer 1R rounding (4)	MP L2
		[34]	

QUESTION 3 [30 MARKS]			
Ques.	**Solution**	**Explanation**	**Level**
3.1.1	Area of rectangular school hall = length × width = 18 m × 12 m ✓SF = 216 m^2 ✓A Area of stage = length × width = 10 m × 5,5 m = 55 m^2 ✓A Area of floor to be tiled = 216 m^2 – 55 m^2 ✓MCA = 161 m^2 ✓CA	1SF substitution 1A area 1A area 1MCA subtracting areas 1CA answer (5)	M L3
3.1.2 (a)	Area of tile = 60 cm × 60 cm ✓M = 3 600 cm^2 = $\frac{3\,600}{100 \times 100}$ ✓C = 0,36 m^2 ✓CA **OR** Area of tile = 0,6 m × 0,6 m ✓C ✓M = 0,36 m^2 ✓CA	1M calculating area 1C conversion 1CA area in m^2 **OR** 1C conversion 1M calculating area 1CA area in m^2 (3)	M L2
3.1.2 (b)	Number of tiles needed = $\frac{161}{0,36}$ ✓MCA = 447,22… × 1,1 ✓M = 491,94 … ≈ 492 tiles ✓CA	**CA from 3.1.1 and 3.1.2(a)** 1MCA dividing correct values 1M multiply by 10% 1CA number of tiles (3)	M L2
3.1.2 (c)	Cutting **OR** breakages **OR** wastage ✓✓O	2O reason (2)	M L4

3.1.3	Scale = 60 mm : 18 m ✓M = 60 : 18 000 ✓C ✓S ✓C = 1: 300 **OR** ✓M Scale = 60 mm: 18 m = 0,06: 18 ✓C = 1 : 300 ✓S	1M correct ratio 1C converting 18m to mm 1S unit ratio **OR** 1M correct ratio 1C converting 6 mm to m 1S unit ratio (3)	M L3
3.2.1	Diameter = 8 cm × 2 ✓M = 16 cm × 10 = 160 mm ✓C **OR** ✓C Diameter: 8 cm × 10 = 80 mm ✓M ∴ 80 mm × 2 = 160 mm	1M multiplying by 2 1C diameter in mm **OR** 1C diameter in mm 1M multiplying by 2 (2)	M L2
3.2.2	Dimensions of unshaded part: Length = 28,5 cm – 2,5 cm – 2,5 cm ✓M = 23,5 cm ✓CA Width = 22 cm – 2,5 cm – 2,5 cm = 17 cm ✓CA	1M subtracting 2,5 twice from length 1CA length 1CA width (3)	M L3
3.2.3	Perimeter = 2 (length + width) = 2 (23,5 cm + 17 cm) ✓SF = 81 cm ✓CA	**CA from 3.2.2** 1SF correct length and width 1CA perimeter (2)	M L1
3.2.4	Area of certificate without border and (circle included) = length × width = 23,5 cm × 17 cm ✓SF = 399,5 cm^2 ✓MCA Area of circle = 3,142 × radius^2 = 3,142 × 8^2 ✓SF = 201,088 cm^2 ✓CA ∴ Area of unshaded part (excluding border and circle): = 399,5 cm^2 – 201,088 cm^2 ✓MCA = 198,412 cm^2 ≈ 198 cm^2 ✓CA ∴ Her statement is valid ✓O	**CA from 3.2.2** 1SF correct dimensions 1MCA area 1SF substitution 1CA area of circle 1MCA subtracting areas 1CA unshaded area 1O opinion (7)	M L4
		[30]	

QUESTION 4 [35 MARKS]

Ques.	Solution	Explanation	Level
4.1.1	Dimensions in mm = 17 inch × 25,4 = 431,8 mm ✓C ∴ Volume = length × width × height = 431,8 mm × 431,8 mm × 431,8 mm ✓SF = 80 509 645,43 mm^3 ✓CA	1C converting dimension 1SF substitution 1CA volume (3)	M L2
4.1.2	Total surface area: = 2 (l × w) + 2 (l × h) + 2 (w × h) = 2 (431,8 × 431,8) + 2 (431,8 × 431,8) + 2 (431,8 × 431,8) ✓SF = 372 902,48 + 372 902,48 + 372 902,48 ✓M = 1 118 707,44 mm^2 ∴ TSA = $\frac{1\ 118\ 707,44}{1\ 000\ 000}$ ✓C = 1,12 m^2 ✓CA **(Accept 1,119 m^2)** ∴ His statement is invalid ✓O **OR** Total surface area: = 2 (l × w) + 2 (l × h) + 2 (w × h) = 2 (0,4318 × 0,4318) + 2 (0,4318 × 0,4318) + 2 (0,4318 × 0,4318) ✓C ✓SF = 0,37290248 + 0,37290248 + 0,37290248 ✓M = 1,12 m^2 ✓CA **(Accept 1,119 m^2)** ∴ His statement is invalid ✓O	1SF substitution 1M multiply by 2 1C conversion 1CA surface area 1O opinion **OR** 1C conversion 1SF substitution 1M multiply by 2 1CA surface area 1O opinion **NPR** (5)	M L4
4.1.3	Number of boxes in length = $\frac{2,2}{0,4318}$ ✓M = 5,094… = 5 boxes ✓A Number of boxes in width = $\frac{1,5}{0,4318}$ = 3,473… = 3 boxes ✓A Number of boxes in height = $\frac{1,6}{0,4318}$ = 3,705… = 3 boxes ✓A Total number of boxes = 5 × 3 × 3 = 45 boxes ✓MCA	1M dividing correct values 1A number of boxes 1A correct number of boxes 1A correct number of boxes 1MCA multiplication and total number of boxes (5)	MP L3

4.2.1	Distance = Speed × Time 18h48min = 18,8 hrs ✓C 1 268 = Speed × 18,8 h ✓SF ∴ Speed = $\frac{1\,268}{18,8}$ ✓M = 67,45 miles/h ✓CA **(Accept 67 OR 67,447 OR 67,5 miles/h)**	1C converting time 1SF substitution 1M changing subject 1CA speed **NPR** (4)	MP L3
4.2.2	1 157 miles = 1 862 km 1 mile = $\frac{1\,862}{1\,157}$ ✓M = 1,609334… ✓CA ≈ 1,609 km ✓R	1M dividing by 1 157 1CA answer 1R rounding (3)	MP L2
4.3.1	Number of arches needed = 11 × 5 ✓MA = 55 arches ✓A	1MA multiply correct values 1A number of arches (2)	M L2
4.3.2	Number of poles needed = $\frac{20}{5}$ ✓M = 4 poles ✓CA	1M dividing by 5 1CA number of poles (2)	M L2
4.3.3	Number of steel rods needed = 11 arches × 5 pegs ✓M = 55 steel rods ✓CA The statement is valid ✓O	1M multiply correct values 1CA simplification 1O opinion (3)	M L4
4.3.4	Volume of a rectangular prism = length × width × height ✓C = 1,2 × 1 × 1,4 ✓SF = 1,68 m^3 ✓CA = 1,68 kl ✓C	1C conversion 1SF substitution 1CA simplification 1C total kilolitres (4)	M L3
4.3.5	Mask is for protection when spraying fertilisers. ✓✓O	2O opinion (2)	M L4
4.3.6	Rainwater ✓✓A **OR** Underground water ✓✓A **OR** Borehole ✓✓A **(Accept any relevant answer.)**	2A answer (2)	M L4
		[35]	

QUESTION 5 [23 MARKS]			
Ques.	**Solution**	**Explanation**	**Level**
5.1.1	Probability $= \frac{2}{6}$ ✓A ✓A $\times 100\%$ $= 33{,}33\%$ ✓CA **(Accept 33,3% OR 33,333%)**	1A numerator 1A denominator 1CA % **(NPR)** (3)	P L2
5.1.2	Actual distance = 815,6 km – 144,9 km ✓M = 670,7 km ∴ 670,7 × 1 000 ✓C = 670 700 m ✓CA	1M subtract correct values 1C conversion 1CA answer (3)	MP L2
5.1.3	Map distance $= \frac{81\,560\,000}{9\,600\,000}$ ✓MA = 8,4958… ✓CA ≈ 8,5 cm ✓R	1MA dividing correct values 1CA answer 1R one decimal place (3)	MP L2
5.1.4	Speed $= \frac{\text{Distance}}{\text{Time}}$ ✓SF 80 km/h = 815,6 km ÷ Time Time $= \frac{815{,}6\text{ km}}{80\text{ km/h}}$ ✓M = 10,195h = 10 hours 11 minutes 42 seconds ✓CA ∴ Time bus travelled = 10:11:42 ✓A ✓M = 01:45:00 = 08:26:42 = 8 hours 26 minutes 42 seconds ✓CA **(Accept 8h 26 min OR 8h 27 min)**	1SF substitution 1M changing subject 1CA time in hours and minutes 1A Total time for stopovers (1h 45 min) 1M subtract time 1CA time bus travelled **NPR** (6)	MP L3
5.2.1	The space left allow for movement of the fluid during temperature change or transportation of the bottles. ✓✓O **(Accept any other relevant response.)**	2O opinion (2)	M L4
5.2.2	Number of rectangular bottles in box $= \frac{3}{5} \times 75$ ✓MA = 45 ✓A ∴ Probability $= \frac{45}{75}$ ✓CA	1MA multiply correct fraction with 75 1A number of rectangular bottles 1CA correct probability (3)	P L2

5.2.3	Volume = 3,142 × radius^2 × height = 3,142 × 4^2 × 5 ✓SF = 251,36 m^3 ≈ 251 m^3 ✓CA ∴ Pam's statement is invalid ✓O	1SF substitution 1CA volume 1O opinion (3)	M L4
		[23]	
		TOTAL: 150	