Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2020

MATHEMATICAL LITERACY P2 MARKING GUIDELINE

MARKS: 150

Symbol	Explanation
M	Method
M/A	Method with accuracy
MCA	Method with consistent accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RM	Reading from a table OR Reading from a graph OR Read from map
F	Choosing the correct formula
SF	Substitution in a formula
J	Justification
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding off OR Reason
AO	Answer only
NPR	No penalty for rounding

This marking guideline consists of 11 pages.

QUESTION 1 [37]			
Ques.	**Solution**	**Explanation**	**Level**
1.1.1	Amount used for 3 batches = 3 × 125 ✓MA = 375 mℓ Number of cups = $\frac{375}{250}$ ✓MA = 1,5 cups **OR** 1½ cups ✓A	1MA Multiplying correct values 1MA Dividing by 250 1A Number of cups (3)	M L2
1.1.2	Price of 3 eggs = $\frac{14,99}{12}$ ✓M = R1,249166667 × 3✓M = R3,7475 ✓S ≈ R3,75✓CA	1M Dividing by 12 1M Multiply by 3 1S Simplification 1CA Cost (4)	F L3
1.1.3	**°Fahrenheit = 1,8 × °Celsius** + 32° = 1,8 × 180° + 32°✓SF = 356°F – 330°F✓M = 26°F	1SF Substitute correct °C 1M Subtract correct values (2)	M L2
1.1.4	Time taken for 9 batches = 25 min + 45 min ✓MA = 70 min × 9 = 630 min ✓CA Time in hours and minutes = 10 hours 30 min✓C Time completed = 09 hours 15 min + 10 hours 30 min✓M = 19:45✓CA Not valid✓O	1MA Total time for preparation and baking 1CA Total time for 9 batches 1C Convert to hours and minutes 1M Adding time 1CA Time completed 1O Not valid (6)	M L4

1.1.5	Cake flour = $\frac{3}{5} \times 250 = 150$ grams Cost of cake flour in grams = $\frac{21,99}{2500}$ ✓M ✓C ✓MCA = 0,008796 × 150 × 9 = R11,87 ✓CA Cost of oil in millilitres = $\frac{35,99}{2000}$ = 0,017995 × 125 × 9 = R20,24 ✓CA Cost of eggs = $\frac{14,99}{12}$ = 1,249166667 × 3 × 9 = R33,73✓CA Total cost = R11,87 + R20,24 + R33,73 = R65,84 ✓CA Invalid ✓O **OR** Cake flour = $\frac{3}{5} \times 250 = 150$ grams ✓C Cost for cake flour in kg = $\frac{21,99}{2,5}$ ✓M ✓C = 8,796 × 0,15 × 9 ✓M = R11,87 ✓CA Cost of oil in litre = $\frac{35,99}{2}$ = 17,995 × 0,125 × 9 = R20,24 ✓CA Cost of eggs = $\frac{14,99}{12}$ = 1,249166667 × 3 × 9 = R33,73 ✓CA Total cost = R11,87 + R20,24 + R33,73 = R65,84 ✓CA Invalid ✓O	1C mℓ to gram 1M Dividing 1C kg to g 1MCA Multiply by 150 and 9 1CA Cost of flour 1CA Cost of oil 1CA Cost of eggs **CA from 1.1.2** 1CA Total cost 1O Invalid 1C mℓ to gram 1M Dividing 1C g to kg 1M Multiply by 0,15 and 9 1CA Cost of flour 1CA Cost of oil 1CA Cost of eggs **CA from 1.1.2** 1CA Total cost 1O Invalid (9)	F&M L4

1.2.1	7 feet 8 inches = (7 × 0,3048) + (8 × 0,0254) ✓C = 2,1336 m + 0,2032 m ✓S = 2,3368 m ✓CA 6 feet 6 inches = (6 × 0,3048) + (6 × 0,0254) = 1,8288 m + 0,1524 m = 1,9812 m ✓CA Length = 2,3368 m + 1,9812 m = 4,318 m ✓CA **OR** Total feet in metres = 7 feet + 6 feet ✓M = 13 feet × 0,3048 ✓M = 3,9624 m ✓CA Total inches in metres = 8 inches + 6 inches = 14 inches × 0,0254 ✓C = 0,3556 m ✓CA Length = 3,9624 m + 0,3556 m = 4,318 m ✓CA	1C cm to m 1M Multiplying and adding 1S Simplification 1CA Answer 1CA Answer 1CA Length 1M Adding 1M Multiply 1CA Answer 1C cm to m 1CA Answer 1CA Length (6)	M L3
1.2.2	Top view ✓A All features clearly visible ✓✓R	1A View 2A Reason (3)	M&P L4
1.2.3	• People preparing meals in the kitchen. ✓✓A • People helping to prepare meals. ✓✓A • People in and out of the kitchen. ✓✓A • It is frequently visited by all. ✓✓A	2A First reason 2A Second reason	M&P L4

QUESTION 2 [39]			
Ques.	**Solution**	**Explanation**	**Level**
2.1.1	Simple Interest Interest = 280 000 × 0,0975 × 2,916666667 ✓A ✓SF = R79 625 ✓CA	1SF Substitution 1A Number of years 1CA Interest (3)	F L2
2.1.2	Compound Interest First year = 280 000 + (280 000 × 0,0825) ✓M = R303 100 ✓CA Second year = 303 100 + (303100 × 0,0825) = R328 105,75 ✓CA 11 months = R328 105,75 + (R328 105,75 × 0,075625) ✓A = R352 918,75 ✓CA **OR** **Amount after 35 months** = 280 000 × 1,0825 × 1,0825 × 1,075625 = R352 918,75 Interest = R352 918,75 – R280 000 = R72 918, 75 ✓CA She will pay less interest on Option 2 (compound interest)	1M Adding and Multiplying 1CA Amt 1st year 1CA Amt 2nd year 1A Interest rate for 11 months 1CA Total amount 1CA Interest 1O Option 2 **CA from 2.1.1** (7)	F L3(6) L4(1)
2.2.1	**Factor 1** ✓M IQR = 75 000 – 40 000 ✓RD = 35 000 ✓CA Median = 60 000 **Factor 2** IQR = 80 000 – 35 000 ✓RD = 50 000 ✓CA Median = 50 000 ✓A ✓O Factor 2 performed worse because their IQR is greater and their median is lower ✓O	1RD Q_1 and Q_3 1M Concept of IQR 1CA IQR 1RD Q_1 and Q_3 1CA IQR 1A Factor 2 1O Comparing median 1O Comparing IQR's (8)	D L3(5) L4(3)
2.2.2	No, factor 2 is still new ✓✓A	**CA from 2.2.1** 2A No with reason (2)	D L4
2.3.1	Percentage = $\frac{94}{150}$ ✓MA × 100%✓M = 62,7%	1MA Dividing correct values 1M Multiply by 100 (2)	M L2

2.3.2	Over the length = $\frac{310\ mm}{78\ mm}$ ✓M ✓A = 3,97… ≈ 3 coffee mugs ✓A Over the width = $\frac{220\ mm}{78\ mm}$ = 2,8… ≈ 2 coffee mugs ✓CA Over the height = $\frac{150\ mm}{94\ mm}$ = 1,6… ≈ 1 coffee mug ✓CA Number of mugs in 1 box = 3 × 2 × 1 = 6 coffee mugs ✓CA Number of boxes = $\frac{66}{6}$ = 11 boxes ✓CA Statement invalid ✓O	1A Correct diameter 1M Divide correct values 1A Number of mugs (length) 1CA Number of mugs (width) 1CA Number of mugs (height) 1CA Total 1CA Number of boxes 1O Invalid (8)	M L4
2.4.1	Northeast ✓✓A North ✓✓A	2A Northeast 2A North (4)	M&P L2
2.4.2	Probability = $\frac{1}{4}$ ✓A ✓A	1A Numerator 1A Denominator (2)	P L2
2.4.3	Turn left on the N6 in East London to Queenstown ✓A Turn right on the R56 to Kokstad ✓A Turn left on the N2 ✓A	1A Left on N6 1A Right on R56 1A Left on N2 (3)	M&P L4

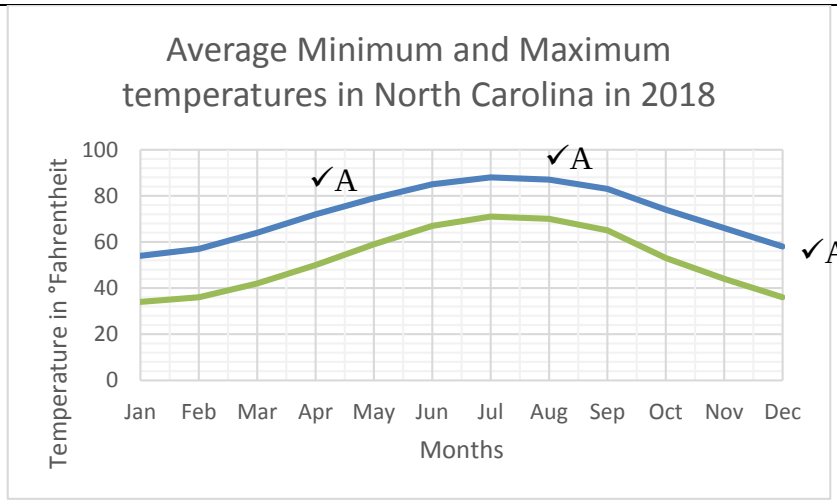
QUESTION 3 [36]			
Ques.	**Solution**	**Explanation**	**Level**
3.1.1	Initial tax = 0,18 × 195 850 ✓A = R35 253 ✓A	1A Use correct % 1A Use correct amount (2)	F L2
3.1.2	Pension = $\frac{7,5}{100}$ × 37 537,75 ✓MA = R2 815,33125 × 12 ✓MA = R33 783,98 ✓CA Donation = 575 × 12 = R6 900 ✓A Total = R33 783,98 + R6 900 = R40 683,98 ✓CA	1MA 7,5% of correct value 1MA Multiply by 12 1CA Pension amount 1A Donation amount 1CA Total amount (5)	F L3
	✓MA ✓MCA		
3.1.3	Taxable income = (37 537,75 × 12) – R40 683,98 = R450 453 – R40 683,98 = R409 769,02 ✓CA	**CA from 3.1.2** 1M Multiply by 12 1MCA Subtract pension and donations 1CA Taxable income (3)	F L2
	✓A		
3.1.4	Tax payable = 63 853 + 31% of taxable income above 305 850 ✓MCA = 63 853 + 0,31 × (409 769,02 – 305 850) = 63 853 + 0,31 × 103 919,02 = 63 853 + 32 214,8962 ✓S ✓M = R96 067,8962 – R14 220 = $\frac{81\,847,8962}{12}$ ✓M = R6 820,66 ✓CA Invalid **OR** less than R6 850 ✓O	**CA from 3.1.3** 1A Correct tax bracket 1MCA Amount above 1S Simplification 1M Subtract rebate 1M Divide by 12 1CA Monthly tax 1O Invalid or Less than (7)	F L3&4
3.1.5	They receive 3 rebates ✓✓A **OR** Their rebate is higher ✓✓A	2A Explanation (2)	F L4

3.1.6	Gross monthly salary in 2018/2019 = $\frac{37\,537,75}{1,064}$ ✓A ✓MA = R35 279,84✓A **OR** Gross monthly salary in 2018 = $\frac{450\,453}{1,064}$ ✓A ✓MA = R35 279,84✓A	1A Correct gross salary 1MA Divide by 1,064 1A Gross salary **CA from 3.1.3** 1A Correct gross salary 1MA Divide by 1,064 1A Gross salary (3)	F V2
3.2.1	Value of A = 90 – (8 + 13 + 30 + 15 + 10) = 90 – 76 ✓MA = $\frac{14}{2}$ ✓M = 7 ✓CA	1MA Subtract from 90 1M Divide by 2 1CA Value of A (3)	D L2
3.2.2	16 years ✓✓A	2A Age (2)	D L2
3.2.3	Average age ✓MCA = $\frac{(13 \times 8) + (14 \times 7) + (15 \times 13) + (16 \times 30) + (17 \times 15) + (18 \times 7) + (19 \times 10)}{90}$ = $\frac{104 + 98 + 195 + 480 + 255 + 126 + 190}{90}$ = $\frac{1\,448}{90}$ ✓M = 16,088… years ✓CA Statement invalid ✓O	**CA from 3.2.1** 1MCA Adding correct values 1M Dividing 1CA Average age 1O Not valid (4)	D L3
3.2.4	Number of boys = 13 + 30 + 15 + 7 Probability = $\frac{65}{90}$ ✓MCA ✓A = 0,722✓R	**CA from 3.2.1** 1MCA Numerator 1CA Denominator 1R 3 decimal places (3)	P L2
3.2.5	The weight of the boys should also be taken into account.✓✓A	2A Reason (2)	D L2

QUESTION 4 [38]			
Ques.	**Solution**	**Explanation**	**Level**
4.1.1	14,202957 ✓A ✓R The lower the value, the stronger the Rand	1A Correct value 1R Reason (2)	D L2&4
4.1.2	Amount after exchange fee = 40 830 – (40 830 × 0,045) = 40 830 – 1837,35 ✓MA = R38 992,65 ✓CA At 14,983385 = $\frac{38\,992,65}{14,983385}$ ✓MCA = $2 602,39 ✓CA At 14,398064 = $\frac{38\,992,65}{14,398064}$ = $2 708,18 ✓CA Difference = $2 708,18 – $2 602,39 = $105,79 ✓CA Statement invalid ✓O **OR** At 14,983385 = $\frac{40\,830}{14,983385}$ ✓MA ✓CA = $2 725,018412 – (2 725,018412 × 0,045) = 2 725,018412 – 122,6258285 ✓MCA = $2 602,39 ✓MCA At 14,398064 = $\frac{40\,830}{14,398064}$ = $2 835,797924 – (2 835,797924 × 0,045) = 2 835,797924 – (127,6109066) = $2 708,18 ✓CA Difference = $2 708,18 – $2 602,39 = $105,79 ✓MCA Statement invalid ✓O	1MA Subtract 4,5% 1CA Value 1MCA Dividing correct values 1CA Dollar value 1CA Dollar value 1MCA Difference 1O Invalid 1MA Dividing correct values 1CA Value 1MCA Subtract 4,5% 1CA Dollar Value 1CA Dollar value 1MCA Difference 1O Invalid (7)	F L3&4
4.1.3	• Political factors ✓✓A **OR** • Economic factors ✓✓A **OR** • Supply and demand of countries ✓✓A **OR** • Inflation rate ✓✓A	2A 1st reason 2A 2nd reason	D L4

	Accept any other relevant responses (4)		

4.2.1	Enlargement: Northern Line (A) = 7,2 cm ✓A **(Accept 7,2 cm – 7,4 cm)** Scale is 4,2 cm = 300 km ✓A **(Accept 4,1 cm – 4,4cm)** Distance = $\frac{7,2\ cm}{4,2\ cm}$ × 300 km ✓M = 514,286 km ✓CA Map: Northern Line (A) = 1,5 cm ✓A **(Accept 1,4 cm – 1,6 cm)** Scale is 4,2 cm = 1 500 km ✓A **(Accept 4,1 cm – 4,4 cm)** Distance = $\frac{1,5\ cm}{4,2\ cm}$ × 1 500 km = 535,714 km ✓CA	1A Measure A 1A Measure scale 1M Ratio 1CA Kilometres 1A Measure line 1A Measure scale 1CA Kilometres (7)	MCL L4
4.2.2	Traveller 1 and 2 = \$670,36 × 2 = \$1 340,72 ✓MA Traveller 3 and 4 = 0,239 × 670,36 ✓M = \$160,22 × 2 = \$320,44 ✓CA Tax Amount = \$188,64 × 4 = \$754,56 ✓MA Total amount = \$1 340,72 + \$320,44 + \$754,56 ✓MCA = \$2 415,72 ✓CA	1MA Amount for 2 travellers 1M 23,9% of 670,36 1CA Amount 1MA Tax amount 1MCA Adding amount 1CA Total amount (6)	F L3
4.3.1	Range = Highest value – Lowest value 34°F = A - 54°F ✓M **A** = 54°F + 34°F = 88°F ✓CA	1M Concept of range 1CA Value of A (2)	D L2
4.3.2	Probability = $\frac{5}{12}$ ✓A ✓A = 0,416… × 100 = 41,6… ≈ 42% ✓CA	1A Numerator 1A Denominator 1CA Nearest % (3)	D L2
4.3.3	°Celsius = (°F – 32) ÷ 1,8 = (34°F – 32) ÷ 1,8 ✓SF = 2 ÷ 1,8 ✓S = 1,1…°C ✓CA Statement not valid ✓O	1SF Substitution 1S Simplification 1CA °C 1O Not valid (4)	M L2&4

4.3.4		1A Jan – Apr **1CA May – Aug from 4.3.1** 1A Sept – Dec (3)	D L2
		TOTAL:	**150**