Province of the EASTERN CAPE EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2020

MATHEMATICAL LITERACY P2
MARKING GUIDELINE

MARKS: 150

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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
     $= 0,008796 \times 150 \times 9$
     $= R11,87$ ✓CA

 Cost of oil in millilitres $= \frac{35,99}{2000}$

     $= 0,017995 \times 125 \times 9$

     $= R20,24$ ✓CA
 Cost of eggs $= \frac{14,99}{12}$
     $= 1,249166667 \times 3 \times 9$
     $= R33,73$ ✓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
     $= 8,796 \times 0,15 \times 9$ ✓M
     $= R11,87$ ✓CA

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 Cost of oil in litre $= \frac{35,99}{2}$
     $= 17,995 \times 0,125 \times 9$
     $= R20,24$ ✓CA
 Cost of eggs $= \frac{14,99}{12}$
     $= 1,249166667 \times 3 \times 9$
     $= R33,73$ ✓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 = $(7 \times 0{,}3048)$ $+ (8 \times 0{,}0254)$✓C
	             $= 2{,}1336$ m $+ 0{,}2032$ m ✓S
	             $= 2{,}3368$ m✓CA
	
	6 feet 6 inches = $(6 \times 0{,}3048) + (6 \times 0{,}0254)$
	             $= 1{,}8288$ 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 $\times 0{,}3048$ ✓M
	                 $= 3{,}9624$ m✓CA
	
	Total inches in metres = 8 inches + 6 inches
	                   $= 14$ inches $\times 0{,}0254$ ✓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 ✓SF ✓A = R79 625 ✓CA (3)	1SF Substitution 1A Number of years 1CA Interest	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 ✓A
	11 months = R328 105,75 + (R328 105,75 × 0,075625)
	    = 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)
	
	(7)
		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
			F
			L3(6)
			L4(1)

2.2.1	**Factory 1** ✓M
	IQR = 75 000 – 40 000 ✓RD
	    = 35 000 ✓CA
	Median = 60 000
	
	Factory 2
	IQR = 80 000 – 35 000 ✓RD
	    = 50 000 ✓CA
	Median = 50 000
	✓A ✓O
	Factory 2 performed worse because their IQR is greater
	and their median is lower ✓O
	
	(8)
		1RD Q$_1$ and Q$_3$
		1M Concept of IQR
		1CA IQR
		
		1RD Q$_1$ and Q$_3$
		1CA IQR
		
		1A Factory 2
		1O Comparing
		median
		1O Comparing
		IQR's
			D
			L3(5)
			L4(3)

2.2.2	No, factory 2 is still new ✓✓A (2)	**CA from 2.2.1** 2A No with reason	D L4
2.3.1	Percentage = $\frac{94}{150}$ ✓MA × 100% ✓M = 62,7% (2)	1MA Dividing correct values 1M Multiply by 100	M L2

2.3.2	Over the length $= \dfrac{310\ mm}{78\ mm}$ ✓A ✓M
	 $= 3{,}97\ldots$
	 ≈ 3 coffee mugs ✓A
	 Over the width $= \dfrac{220\ mm}{78\ mm}$
	 $= 2{,}8\ldots$
	 ≈ 2 coffee mugs ✓CA
	 Over the height $= \dfrac{150\ mm}{94\ mm}$
	 $= 1{,}6\ldots$
	 ≈ 1 coffee mug ✓CA
	
	 Number of mugs in 1 box $= 3 \times 2 \times 1$
	                  $= 6$ coffee mugs ✓CA
	 Number of boxes $= \dfrac{66}{6}$
	             $= 11$ 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 $= \dfrac{1}{4}$ ✓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
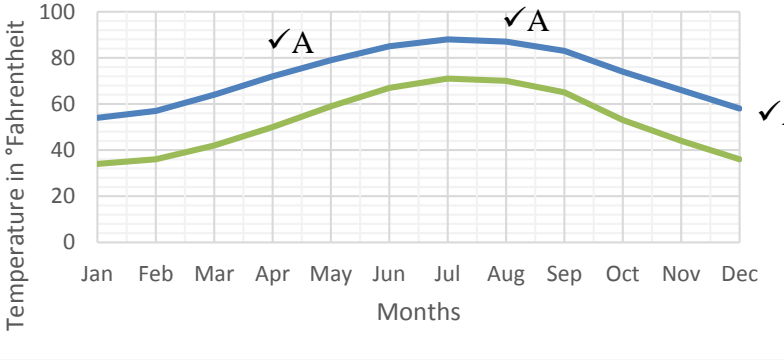
QUESTION 3 [36]			
Ques.	Solution ✓A	Explanation	Level
3.1.1	Initial tax = 0,18 × 195 850 = R35 253	1A Use correct % 1A Use correct amount (2)	F L2

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

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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 = R35 279,84✓A ✓MA	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 $= \frac{(13 \times 8) + (14 \times 7) + (15 \times 13) + (16 \times 30) + (17 \times 15) + (18 \times 7) + (19 \times 10)}{90}$ ✓MCA $= \frac{104 + 98 + 195 + 480 + 255 + 126 + 190}{90}$ $= \frac{1\,448}{90}$ ✓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 = 0,722 ✓A ✓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 = \$2 725,018412 – (2 725,018412 × 0,045) ✓CA = 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 ✓A cm = 300 km **(Accept 4,1 cm – 4,4cm)** Distance = $\frac{7,2\ cm}{4,2\ cm} \times 300$ km ✓M $\qquad$ = 514,286 km ✓CA Map: Northern Line (A) = 1,5 cm ✓A **(Accept 1,4 cm – 1,6 cm)** ✓A Scale is 4,2 cm = 1 500 km **(Accept 4,1 cm – 4,4 cm)** Distance = $\frac{1,5\ cm}{4,2\ cm} \times 1\ 500$ km $\qquad$ = 535,714 km ✓CA	1A Measure A 1A Measure scale 1M Ratio 1CA Kilometres 1A Measure line 1A Measure scale 1CA Kilometres $\qquad$ (7)	... L4
4.2.2	Traveller 1 and 2 = $670,36 × 2 $\qquad$ = $1 340,72 ✓MA Traveller 3 and 4 = 0,239 × 670,36 ✓M $\qquad$ = $160,22 × 2 $\qquad$ = $320,44 ✓CA Tax Amount = $188,64 × 4 $\qquad$ = $754,56 ✓MA Total amount = $1 340,72 + $320,44 + $754,56 ✓MCA $\qquad$ = $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 $\qquad$ (6)	F L3
4.3.1	Range = Highest value – Lowest value $\quad$ 34°F = A - 54°F $\quad$ ✓M **A** = 54°F + 34°F $\quad$ = 88°F ✓CA	1M Concept of range 1CA Value of A $\qquad$ (2)	D L2
4.3.2	Probability = $\frac{5}{12}$ ✓A ✓A $\qquad$ = 0,416… × 100 $\qquad$ = 41,6… $\qquad$ ≈ 42% ✓CA	1A Numerator 1A Denominator 1CA Nearest % $\qquad$ (3)	D L2
4.3.3	°Celsius = (°F – 32) ÷ 1,8 $\qquad$ = (34°F – 32) ÷ 1,8 ✓SF $\qquad$ = 2 ÷ 1,8 ✓S $\qquad$ = 1,1…°C ✓CA Statement not valid ✓O	1SF Substitution 1S Simplification 1CA °C 1O Not valid $\qquad$ (4)	M L2&4

4.3.4	Average Minimum and Maximum temperatures in North Carolina in 2018	1A Jan – Apr **1CA May – Aug from 4.3.1** 1A Sept – Dec	D L2
	(3)		
		TOTAL:	**150**