**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2016

**MATHEMATICAL LITERACY P2
MEMORANDUM**

MARKS: 100

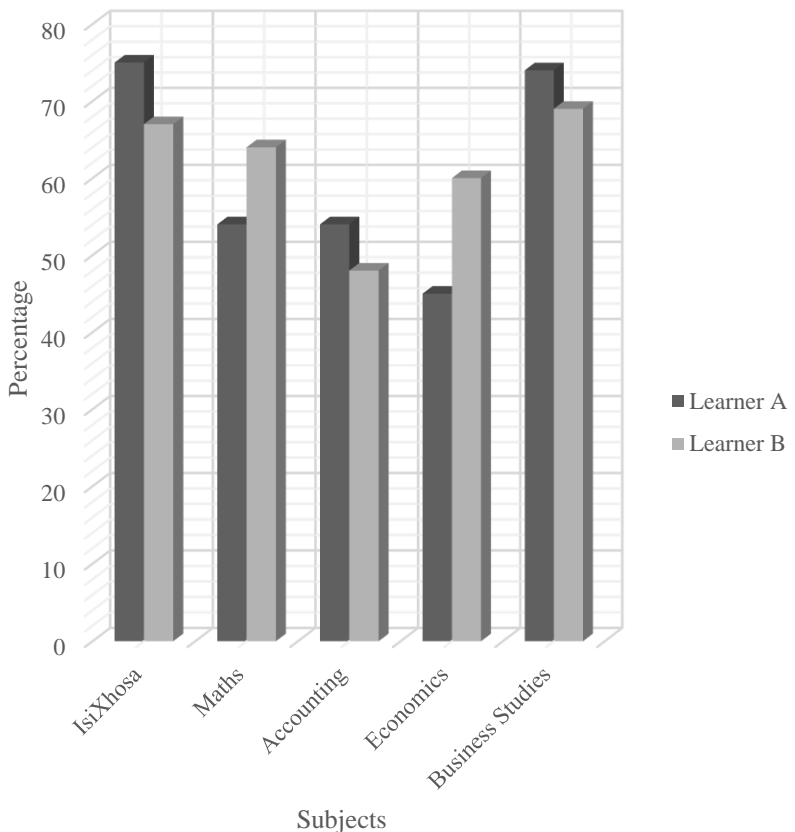| Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RM	Reading from a table/Reading from a graph/Read from map
F	Choosing the correct formula
SF	Substitution in a formula
J	Justification
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding Off/Reason
O	Opinion

This memorandum consists of 8 pages.

QUESTION 1 [23]			
Ques.	**Solution**	**Explanation**	**Level**
1.1.1	Electricity ✓✓ Water ✓✓ Transport ✓✓ **Accept any relevant answers.**	2A One expense excluding cost of ingredients (2)	L2
1.1.2	Costs for 24 muffins Muffin mix 500 g for 12 muffins $\qquad$ 1 kg of muffin mix = R12,00 $\qquad$ 500 = ½ kg = R6,00 $\qquad \therefore$ For 24 muffins = R6,00 × 2 $\qquad\qquad$ = R12 ✓ Eggs: 6 = R10,50 $\qquad 2 = \dfrac{10,50}{6} \times 2$ $\qquad$ = R3,50 ✓ Oil ½ cup = 250 mℓ $\quad$ 750 mℓ = R12,50 $\qquad \therefore \dfrac{12,50}{750} \times 250$ $\qquad\qquad$ = R4,17 ✓ 1M Milk 3 cups = 750 mℓ $\quad$ 1 000 mℓ = R11,50 $\qquad \therefore$ 750 mℓ $= \dfrac{11,50}{1\,000} \times 750$ $\qquad\qquad$ = R8,63 ✓ 1M Total amount = R12,00 + R3,50 + R4,17 + R8,63 $\qquad\qquad$ = R28,30 ✓ $\qquad\qquad$ **OR** Muffin mix $= \dfrac{12,00}{1\,000} \times 500$ $\qquad\qquad$ = R6,00 ✓ Eggs $= \dfrac{10,50}{6}$ $\qquad$ = R1,75 ✓ Oil $= \dfrac{12,50}{750} \times 125$ $\qquad$ = R2,08 √ Milk $= \dfrac{11,50}{1\,000} \times 375$ $\qquad$ = R4,31 √ Total = 6 + 1,75 + 2,08 + 4,31 $\qquad$ = 14,14 × 2 $\qquad$ = R28,28 √	1M For muffin mix 1M for eggs 1M for oil 1M for milk 1CA Total amount (5)	L3

1.1.3	Cost R28,30 for 24 muffins	CA from 1.1.2	
	$\therefore$ For 1 200 $= \dfrac{28,30}{24}$ × 1 200		
	$= R1\ 415$ ✓		
	Selling price = R30 per dozen	1MA expenses for	
	1 200 = 1 200 / 12	1 200 muffins	
	= 100 dozen ✓		
	Money received for 120 dozen = 100 × 30	1CA number of	
	$= R3\ 000$ ✓	dozen	
	Profit = R3 000 – R1 415	1MA Income for	
	= R1 585 ✓	1 200 muffins	
	Statement is valid ✓	1CA Difference	
		1 O	
	OR		
	$\dfrac{28,28}{2}$ = 14,14 x 100 = R1 414 (expenses) ✓		
	Income = 100 × R30 ✓		
	= R3 000 ✓		
	Profit = R3 000 – R1 414		
	= R1 586 ✓		
	Statement is valid. ✓	(5)	L3
1.1.4	In 25 minutes she makes 24 muffins		
	$\therefore$ 240 muffins $= \dfrac{25}{24}$ × 240		
	= 250 minutes ✓	1MA Time for	
	She will bake 10 times.	baking	
	Time spent on cleaning pans:		
	10 × 10 minutes = 100 minutes ✓	1CA time for	
		cleaning	
	Total time = 250 + 100 = 350 minutes		
	Time in hours = 350 / 60		
	= 5,833333333 hours	1CA Convert to	
	= 5 hours 50 minutes ✓	hours and minutes	
	Time taken to reach destination:		
	Time = 50 / 100	1C driving time	
	= 0,5		
	= 30 minutes ✓		
	Total time = 5h50 + 0h30	1CA adding time	
	= 6 hours 20 minutes ✓		
	Time arrived = 09:00 + 6 hours 20 minutes	1CA time of arrival	
	= 15:20 ⎫ ✓	and statement	
	She will arrive on time. ⎭	(6)	L4

1.2	Cleaner = R50 × 5 × 20
	          = 5 000 ✓
	Driver = ($\frac{175}{100}$ × 50)
	Driver per month = R87,50 ✓
	                = R87,50 × 5 × 20
	                = 8 750 ✓
	Assistant = 50 + 25
	          = 75
	Assistant per month = 75 × 5 × 20
	                = 7 500 ✓
	Total spent on workers = 5 000 + 8 750 + 7 500
	                = R21 250 ✓
		1M Salary for cleaner
		
		1M calculating 75% more
		
		1CA Salary for driver per month
		
		1M helper per month
		
		1CA total
		                (5)
			L3

		[23]	

QUESTION 2 [27]

Ques.	Solution	Explanation	Level
2.1.1	✓ 5 16 16 21 22 34 34 35 35 35 42 42 42 42 $\frac{30}{100}$ × 50 = 15 ✓ 13 learners were able to get more than 30% and only one leaner got less than 30% therefore the learners performance was good. ✓✓	2M Calculate the number who passes 2O (4)	L4

2.1.2	$\frac{5+16+16+21+22+34+34+35+35+35+42+42+42+42}{14}$ ✓
	                       14 ✓
	= 421 / 14
	= 30,07 ✓
		CA from 2.1.1
		1M Adding values
		1A Divide by 14
		
		1 CA mean
		                (3)
			L3

2.1.3	Mode = 42 ✓
	Median:
	5 16 16 21 22 34 34 35 35 35 42 42 42 42
	$\frac{35+34 ✓}{2}$ = 34,5 ✓
	∴ Difference = 42 – 34,5
	                = 7,5 ✓
		1A mode
		
		2MA finding the median
		
		1CA Difference
		                (4)
			L4

2.1.4	$\frac{50}{100}$ × 50 = 25 ✓
	∴ $\frac{5}{14}$ ✓ × 100
	     = 35,71% √
	Accept 35,7%
		1M Calculate value of 50%
		1M probability as a fraction
		1CA percentage
		                (3)
			L3

2.2.1	Mathematical Literacy = 50 ✓✓ Mathematics = 50 ✓	2A First answer 1A Second answer (3)	L2
2.2.2	Mathematics = 83 ✓✓✓	3A Correct exam number (3)	L2
2.2.3	✓ ✓ 60 – 54 = 6 ✓	1A for left 1A for right 1CA difference (3)	L2

2.2.4	Ratio = 1 : 30
	Number of learners = (9 × 6) + (10 × 10) + (6 × 10) ✓
	                              = 54 + 100 + 60
	          ✓ = 214 ✓
	214 / 30 = 7,1
	     ∴ 8 invigilators will be needed ✓
		1M Total number
		
		1CA Total
		1CA Dividing by 30
		1R
		(4)
			L4

		[27]	
QUESTION 3 [21]			

Ques.	Solution	Explanation	Level

3.1.1	<table><tr><td>Subjects</td><td>Learner A
	APS score</td><td>Learner B
	APS score</td></tr><tr><td>IsiXhosa</td><td>6</td><td>5</td></tr><tr><td>English FAL</td><td>5</td><td>5</td></tr><tr><td>Mathematics</td><td>4</td><td>5</td></tr><tr><td>Life Orientation</td><td>3</td><td>3</td></tr><tr><td>Accounting</td><td>4</td><td>3</td></tr><tr><td>Economics</td><td>3</td><td>5</td></tr><tr><td>Business Studies</td><td>6</td><td>5</td></tr><tr><td>Total:</td><td>31</td><td>31</td></tr><tr><td colspan="3">Both learners have the same APS score. ✓O</td></tr></table>
		1A ⌐
		
		1A For each
		          2 correct
		          for both
		          learners
		
		1A ⌐
		
		1A LO
		
		1CA Adding all values
		1O Conclusion
		(6)
			L4

3.1.2	**Percentages of 2 Grade 12 learners** 	CA from 3.1.1 1A for each two compound bars (5)	L2
3.1.3	Equal chances ✓✓	2O (2)	L2

3.2.1	Rent = R1 650 × 11
	   = R18 150 ✓
	Food = 1 500 × 10
	   = R15 000 ✓
	
	Total amount = R18 150 + R15 000 ✓
	   = 33 150 ✓
		1M Calculating rent
		1M Calculating food
		1M Addition
		1CA Total
		(4)
			L2

3.2.2	✓✓ Share room with someone **OR** to save on costs **OR** no privacy.	2O Explanation (2)	L4
		[19]	

Please turn over

QUESTION 4 [31]		

Ques.	Solution	Explanation	Level

4.1	Triangular window:
	Base = 150 cm = 1,5 m
	Height = 100 cm = 1 m ✓
	    ∴ Area of triangular window = ½ base × height
	                      = ½ × 1,5 × 1 ✓
	                      = 0,75 m²
	Total = 0,75 × 4
	       = 3 m² ✓
	
	Circular window:
	Radius = ½ × 1,5
	         = 0,75 m ✓
	    ∴ Area of circular window = π × r²
	                      = 3,142 × 0,75 × 0,75 ✓
	                      = 1,767375 m²
	Total = 1,767375 × 4
	       = 7,069 m² ✓
	
	Square window:
	Width = 1,5 m
	Length = 1,5 m
	    ∴ Area of square window = S²
	                     = 1,5 × 1,5
	                     = 2,25 m²
	Total = 2,25 × 4
	       = 9 m² ✓
	
	Total area of windows for all four walls = 3 + 7,069 + 9 ✓
	                                     = 19,069 m² ✓
	
	Area of wall of 1 classroom = l × b
	                           = 12 × 5
	                           = 60 m² ✓
	Total area for four classrooms = 60 × 4 ✓
	                             = 240 m² ✓
	
	Area of wall to be painted = total area of walls – total area of windows
	= 240 – 19,069 ✓
	= 220,9305 m²
	= 221 m² ✓
		1C covert to m
		
		1SF
		
		1CA answer
		
		1A radius
		
		1SF
		
		1CA area of four circular window
		
		1CA area of four square windows
		
		1CA adding the areas
		
		1CA total of areas
		
		1M area of 1 classroom wall
		
		1M for ×4 area of 4 classrooms
		
		1CA answer
		
		1CA subtraction
		
		1CA Wall area to be painted
		(14)
			L3

4.2	Litres required for the walls:
	8 m² = 1 ℓ
	221 m² = 1 /1 × 221 / 8
	         = 27,625 litres ✓
	If 5 litre tins are bought:
	27,625 / 5 = 5,525 = 6 tins of paint ✓ (5 ℓ)
	Cost = 6 × 105 ✓
	       = R630
	If 20 litres tins are bought:
	27,625 / 20 = 1,38 = 2 ✓
	Cost = 2 × 405
	        = R810 ✓
	Their statement is valid. ✓
		CA from 4.1.1
		1MA
		
		1CA
		
		1M × by 105
		
		1M
		
		1CA
		
		1O		

			(6)	L4

4.3.1	5 ℓ tins:
	Radius = 9 cm
	Diameter = 18 cm
	Box A:
	Number of tins over the length of the box:
	130/18 = 7 ✓
	
	Number of tins over the height of the box:
	25/24 = 1,04 =1 ✓
	
	Number of tins over the width of the box:
	104/18 = 5,77 = 5 ✓
	
	Total tins for Box A = 7 × 1 × 5
	               = 35 tins ✓
	Box B:
	l = 65 cm
	b = 49 cm
	h = 52 cm
	
	Number of tins on the width of the box:
	65/18 = 3,6 = 3
	Number tins along the length of the box:
	49/24 = 2,04 = 2
	No. of tins on height = 52/18 = 2,88 = 2
	
	Total number of tins in box B = 3 × 2 × 2
	                         = 12 tins ✓
	Box A can carry 28 tins which is more than 2 times
	12 so their argument is valid. ✓
		1M number of tins
		over length
		
		1M number of tins
		over width
		
		1M number of boxes
		over height
		
		1CA total number of
		tins in Box A
		
		1CA total number of
		boxes in Box B
		
		1O		

			(6)	L3

4.3.2	Tins in Box B = 12 ✓
	Tins in 20 boxes = 12 × 20
	                = 240 ✓
	                ✓
	Amount lost = R105 × 240 ✓
	              = R25 200 ✓
		1CA from 4.3.1
		1CA number of tins
		1M × by 240
		1A Price of paint
		1CA Total amount		

			(5)	L3
			[31]	
		TOTAL:	**100**	