basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P2

EXEMPLAR 2014

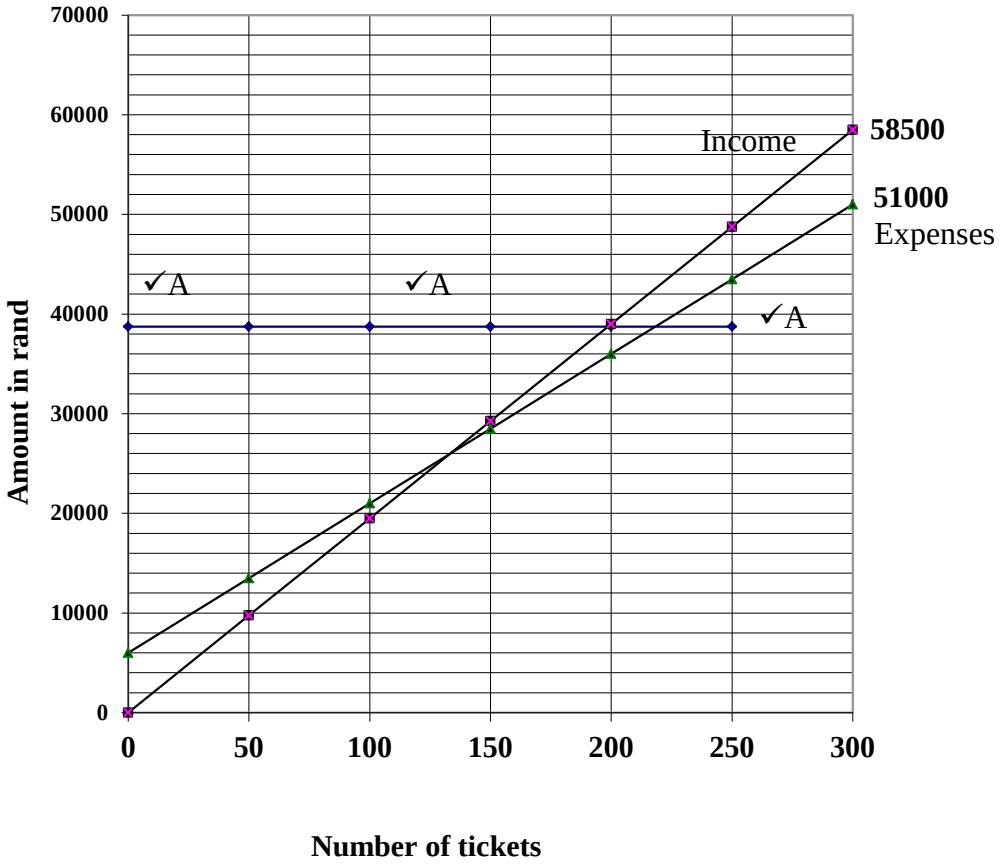
MEMORANDUM

MARKS: 150

Symbol	Explanation
M	Method
M/A	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG	Reading from a table/Reading from a graph
SF	Correct substitution in a formula
O	Opinion/Example
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding off

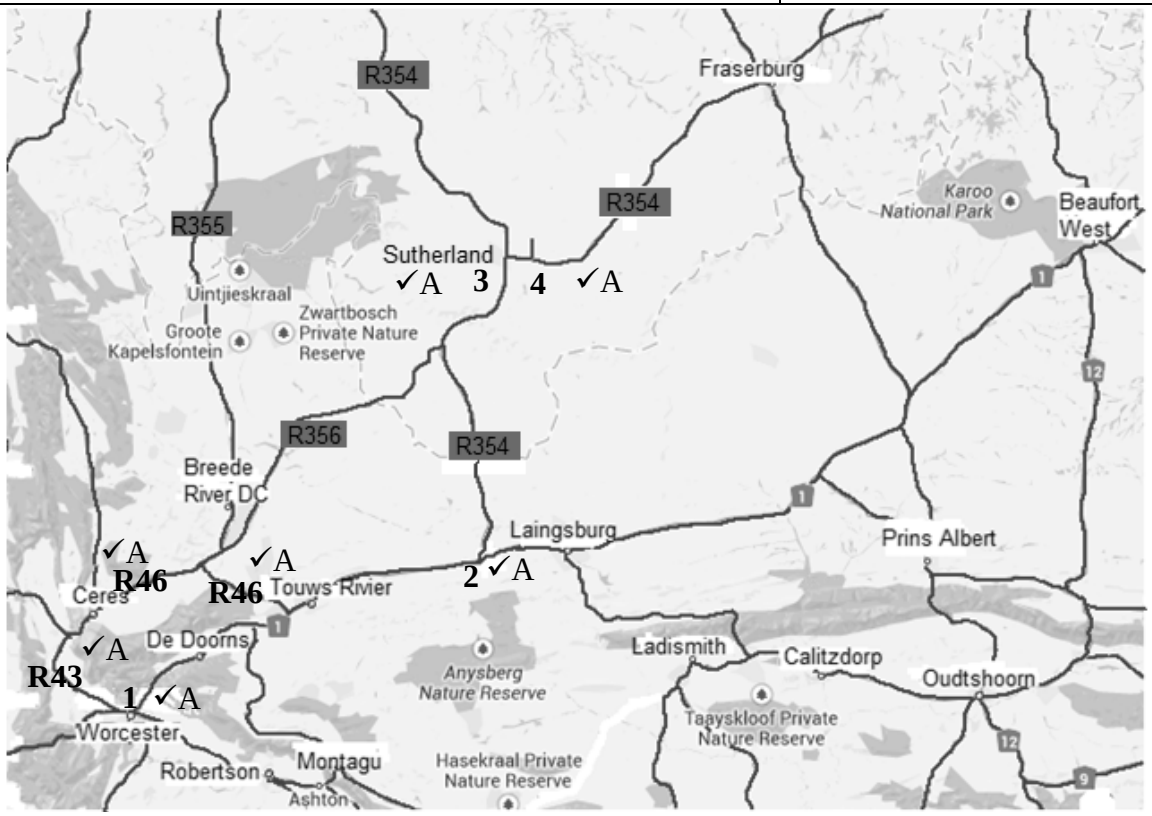
This memorandum consists of 11 pages.

QUESTION 1 [40 MARKS]			
Ques	**Solution**	**Explanation**	
1.1.1	✓ M/A Amount = R1 500 + R500 + R1 000 × 2 ✓ A = R4 000 ✓ CA	1M/A adding values 1A 2 hours after 24:00 1CA amount (3)	L3
1.1.2 (a)	Remaining length = $\frac{2}{3} \times 23\text{m}$ ✓ A = 15,33 m ✓ CA Area = length × breadth = 15,33 m × 18 m ✓ SF = 275,94 m^2 ✓ CA ✓ M Area per table = $\frac{275{,}94\text{m}^2}{30}$ = 9,198 m^2 ≈ 9 m^2 ✓CA **OR** Area for tables = 30 × 9 m^2 = 270 m^2 This is less than the available area ∴ Kgothso was correct. ✓CA	1A using $\frac{2}{3}$ 1CA length 1SF substituting values 1CA area 1M dividing by 30 1CA area per table 1CA verification (7)	L3 (4) L4 (3)
1.1.2 (b)	9 m^2 = 3 m × 3 m ∴ areas are 3 m across ✓ A ✓ C Width needed for table and chairs = 1,8 m + 2 × 0,45 m = 2,7 m ✓ CA ∴ walking space = 3 m – 2,7 m ✓M = 0,3 m ✓CA = 30 cm OR Extra space on each side = 15 cm Space between tables = 15 cm × 2 = 30 cm ✓CA	1A dimension 1C conversion 1CA width 1M subtracting 1CA walking space (5)	L2 (1) L4 (4)
1.1.3 (a)	R6 000 ✓✓RG	2 RG Interpret fixed expense (2)	L2
1.1.3 (b)	Total fixed expense = tickets + table decorations + DJ ✓A ✓A ✓✓A = 300 tickets × R2,20 + 30 tables × R128 + R1 500 = R660 + R3 840 + R1 500 = R6 000	1A tickets 1A table decorations 2A DJ (4)	L4

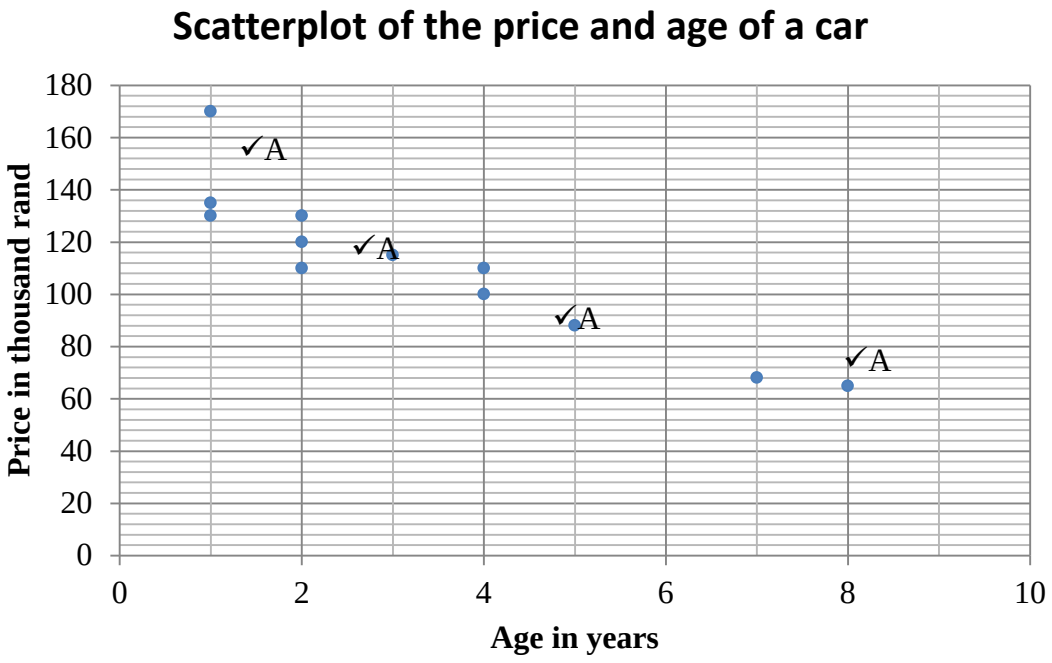
Ques	Solution	Explanation	
1.1.4	133 tickets [Accept answers from 130 to 140] ✓✓RG	2RG number of tickets (2)	L2
1.2.1	Venue including VAT = R30 000 × 1,14 ✓M = R 34 200 ✓CA ✓M ✓A Total cost = R34 200 + R4 000 + 250 × R2,20 = R38 750 ✓CA	1M adding VAT 1CA cost of venue 1M adding the values 1A cost of tickets 1CA total cost (5)	L3
1.2.2	**Income and expense for Dinner and Dance evening**  1 CA starting at (0 ; R38 750) 1 A horizontal line 1 A ending at (250 ; R38 750) (3)		L3

Ques	Solution	Explanation	
1.3	Profit if the hall is used = R58 500 – R51 000 = R7 500 ✓CA Income if venue ABC is used = 250 × R195 ✓M = R48 750 ✓CA Profit if venue ABC is used = R48 750 – R38 750 ✓M = R10 000 ✓CA Difference in profit = R10 000 – R7 500 = R2 500 ✓✓CA	1CA profit using the hall 1M multiplying with 250 1CA income 1M subtracting 1CA profit using ABC 2CA difference (7)	L4
1.4	They will print and sell less tickets ✓✓O OR They would not be responsible to tidy up the venue OR Any other valid reason	2 O valid reason (2)	L4
		[40]	

QUESTION 2 [37 MARKS]			
Ques	**Solution**	**Explanation**	
2.1.1	Total weight = 91 × 100kg = 9 100 kg ✓A 9 100kg = $\frac{9\,100}{0{,}45359}$ ✓M ≈ 20 062,17 lb ✓CA 20 062,17 lb = $\frac{20\,062{,}17}{14}$ ✓M ≈ 1 433,01 stone ✓CA No he is wrong, 9 100 kg is less than 1 450 stone ✓J OR 1 stone = 14 × 0,45359 kg ✓M = 6,35026 kg ✓CA 1450 × 6,35026 ✓M ≈ 9 207,88 kg ✓CA No he is wrong, 1 450 stone is more than the 9 100 kg ✓J	1A total weight 1M dividing by 0,45359 1CA pounds 1M dividing by 14 1CA stone 1J conclusion (6)	L4
2.1.2 (a)	Surface area of a cylinder = $2 \times \pi \times$ radius $\times$ height ✓SF = 2 × 3,142 × 13 × 17 ✓A =1 388,76 4m^2 ✓CA Area to be covered = 1 388,764 – 61 × 2,25 × 0,98 ✓M ✓C = 1 388,764 – 134,505 ✓CA = 1 254,259 m^2 ✓CA	1SF substitution 1A radius 1CA surface area cylinder 1M subtracting 61 louvers 1C conversion 1CA area of the louvers 1CA area to be cladded (7)	L3
2.1.2 (b)	Circumference of a cylinder = $2 \times \pi \times$ radius = 2 × 3,142 × 13 ✓SF = 81,692 m ✓CA Number of sides = $\frac{81{,}692}{5{,}1}$ ✓M ≈ 16 ✓CA	1SF substitution 1CA circumference 1M dividing 1CA 16 sides (4)	L2
2.1.3 (a)	Southern view ✓✓A (accept south west or south east as well)	2A elevation (2)	L4
2.1.3 (b)	32 ft = 10 m 1 ft = $\frac{10}{32}$ = 0,3125 m ✓M 110 ft = 110 × 0,3125 = 34,375 m ✓CA ≈ 34,38 m	1M using scale to find 1 ft 1CA height (2)	L2

Ques	Solution	Explanation	
2.2.1 & 2.2.4	 2.2.1 4 A At each turn (4) 2.2.4 1A Showing R46 in North –westerly direction 1A Showing R46 in South – westerly direction 1A showing R43 (3)		L2
2.2.2	Total distance from Worcester to Laingsburg = 29 km + 42 km + 89 km ✓M = 160 km ✓CA Distance on N1 to turn off = 125 km Distance from Laingsburg = 160 km – 125 km ✓M = 35 km ✓CA	1M adding the correct distances 1CA total distance 1M subtracting 125 km 1CA distance (4)	L3
2.2.3	Total distance travelled = 125 km + 110 km + 13,7 km + 4,9 km = 253,6 km ✓CA 2 h 56 min = $2 + \frac{56}{60}$ h = $\frac{44}{15}$ h = 2,9333... h ✓C Total distance = average speed × time 253,6 km = average speed × 2,9333... h ✓SF Average speed = $\frac{253{,}6\text{ km}}{2{,}9333\text{ h}}$ ✓S ≈ 86,45 km/h ✓CA	1CA total distance 1C converting 1SF substituting 1S change subject of formula 1CA speed (5)	L3
		[37]	

QUESTION 3 [37 MARKS]

Ques	Solution	Explanation	
3.1.1	Mean in thousand rand = $\frac{115+65+64{,}9+100+130+120+88+110+130+135+170+110}{12}$ ✓M/A ✓A = 111,491 ✓CA Mean selling price = R111 000 ✓R	1M/A adding values 1A dividing with 12 1CA mean 1R correctly rounded (4)	L2
3.1.2	R88 000 is 5 years old ∴ 4 years older ✓A 2013 – 4 = 2009 ✓A	1A 4 year difference 1A 2009 **ANSWER ONLY FULL MARKS** (2)	L3
3.1.3 (a)	Range for 1 year old =R170 000 – R130 000 = R40 000 ✓M/A Range for 2 year old = R130 000 – R110 000 = R20 000 ✓CA ∴ 1-year-old cars have the biggest range of prices ✓O	1MA subtracting 1CA range 1O conclusion (3)	L2
3.1.3 (b)	The condition of the car (having dents and scratches price decrease) ✓✓J The kilometres on the dial (more kilometres price decrease) Or any other valid reason	2J valid reason (2)	L4
3.1.4 (a)	 1A if 3 points are plotted correctly 2A if 6 points are plotted correctly 3A if 9 points are plotted correctly 4A if all the points are plotted correctly (4)		L 2

Ques	Solution	Explanation	
3.1.4 (b)	The price of a car decreases as the age increase ✓✓J	2J correct trend (2)	L4
3.1.4 (c)	Since the values given in the table is decreasing every year but not at a fixed rate, it is possible for a 9 year old car to cost R50 000. ✓✓J	2J reasoning (2)	L4
3.2.1	49 ✓✓RG	2RG number of months (2)	L2
3.2.2	9 months ✓✓A	2A number of months (2)	L4
3.2.3	The values are discrete because it is the number of vehicles sold and that must be a whole number. ✓A ✓A	1A discrete 1A whole number (2)	L4
3.2.4	✓✓A ✓✓A 50% of the months Dealership L sold more than 34 vehicles while Dealership K only sold more than 30 vehicles per month. **OR** ✓✓A The middle value of Dealership L is higher which means for 6 of the twelve monts the sales exceeded 34 vehicles per ✓✓A month.	2A meaning of median 2A explanation (4)	L4
3.2.5	• Dealership M has the highest number sold in one month namely 60 vehicles ✓✓A • Dealership M lowest number sold 20 is whilst the other Dealerships have a lowest of 10 ✓✓A • The lower and the upper quartile values and the median are all higher than ✓✓A • For 3 months (the upper quartile) the sales were more then 49 vehicles per month. ✓✓A	2A mentioning maximum value 2A mentioning the minimum value 2A mentioning the quartile values 2A mentioning the upper quartile (8)	L4
		[37]	

QUESTION 4 [36 MARKS]			
Ques	**Solution**	**Explanation**	
4.1	A case = 6 × 4 = 24 cans ✓A Price per can = $\frac{R137,50}{24}$ ✓M = R5,73 ✓CA Profit per can = R8,00 – R5,73 ✓M = R2,27 ✓CA Percentage added = $\frac{R2,27}{R5,73} \times 100\%$ ✓M = 39,616...% ≈ 39,62% ✓CA **OR** R5,73 × percentage added = R8,00 Percentage added = $\frac{R8,00}{R5,73} \times 100\%$ ✓M ≈ 139,62% ∴ Percentage added = 139,62% - 100% ✓M = 39,62% ✓CA	1A number of cans 1M dividing by 24 1CA price 1M subtracting 1M finding percentage 1CA percentage OR 1M finding percentage 1M subtracting 1CA percentage (7)	L3
4.2.1	Yes, most people would go for the cheaper version of the product ✓✓O	2O for the reason (2)	L4
4.2.2	Number of cans sold per week = 6 × 24 = 144 ✓A Total profit made on cans = 144 × R2,27 = R326,88 ✓CA Profit per bottle = R5,00 – R4,20 = R0,80 ✓A Number of bottles to sell = $\frac{R326,88}{R0,80}$ ✓M = 408,6 ≈ 409 ✓CA	1A number of cans 1CA profit on cans 1A profit per bottle 1M dividing 1CA number of bottles (5)	L3

Ques	Solution	Explanation	
4.2.3	Percentage increase of sales $= \frac{\text{Increased number sold per week}}{\text{Original number sold per week}} \times 100\%$ $= \frac{409-144}{144} \times 100\%$ ✓M ✓SF $\approx$ 184,03% ✓CA	1M subtracting 1SF substituting 1CA percentage (3)	L2
4.2.4	The number of cooldrinks increase from 144 per week to 409 per week. $\therefore$ the percentage increase is 184% ✓O This means it is nearly 3 times more than what she sold before. The decrease in the price is from R8,00 to R5,00. A person knowing the price is R8,00 would not have enough money to buy a second bottle, but persons coming with R10 might buy 2 bottles. This will only double her sales. ✓O The increase is just too much. ✓O	1O recognising how much more she needs to sell 1O reasoning about the decreased price and its effects 1O conclusion (3)	L4
4.3.1	P(vetkoek) = $\frac{6}{18} = \frac{1}{3}$ ✓A ✓A Predicted number = $\frac{1}{3} \times 12$ ✓M = 4 ✓CA	1A number of events 1A number of outcomes 1M multiplying probability with 12 1CA predicted number (4)	L3
4.3.2	P(sweets or cooldrink) = $\frac{9}{18}$ ✓A ✓A $= \frac{1}{2}$ ✓CA	1A number of events 1A number of outcomes 1CA simplification (3)	L3

Ques	Solution	Explanation	
4.3.3	✓A $\frac{5}{18} = \frac{144}{\text{number of customers}}$ ✓A $\therefore$ 5× number of customers = 18 × 144 Number of customers = $\frac{2592}{5}$ ✓S = 518,4 ≈ 518 or 519 ✓CA OR Ratio choosing cooldrink to number of customers is 5 :18 ✓A $\therefore 1 : \frac{18}{5}$ ✓A Then $144 : \frac{18}{5} \times 144$ ✓M 144 : 518 or 144 : 519 ✓CA	1A probability of cool drink 1A ratio with number of cool drinks 1S changing the subject 1CA number of customers OR 1A ratio 1A unit ratio 1M multiplying 1CA number of customers (4)	L3
4.4	Layout A: Fridge and table near to the door leading to her house Layout B: Fridge and table near the window through which she sells. ✓✓A ✓O She should use Layout B. When serving customers the Fridge and table is closer to the window and she will not have to walk so far to fetch vetkoek and cool drinks. ✓O Vetkoek and cool drinks are the two items which is more likely to be bought by her customers $\frac{11}{18} \approx 0{,}6$ or 60% choose those two.	2A comparing the layouts 1O choosing B 1O mentioning something about the distance 1O mentioning the two products more likely to be chosen (5)	L4
		[36]	
		Total :150	