basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 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

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QUESTION 1 [27 MARKS]

Ques	Solution	Explanation	AS/L
1.1.1	$45\ \%\ \text{of}\ 26{,}7 - \sqrt{\frac{24 \times 345}{10\,389}}$ $= 12{,}015 - 0{,}8927467...$ ✓A $= 11{,}12225....$ $\approx 11{,}12$ ✓CA	1A calculation 1CA rounding (2)	12.1.1 L1
1.1.2	$1{,}068 = \frac{1\,068}{1\,000} \overset{\checkmark A}{=} \frac{267}{250} = 1\frac{17}{250}$ ✓A	1A fraction 1A simplest form (2)	12.1.1 L1
1.1.3	✓A September 1970 ✓A	1A Year 1A month (2)	12.1.1 L2
1.1.4	$R1 = €0{,}10717$ $€32\,527 = \frac{R1 \times €32\,527}{€0{,}10717}$ ✓M/A $= R303\,508{,}4445$ $= R303\,508{,}44$ ✓CA	1M/A dividing 1CA simplification (2)	12.1.1 L2
1.1.5	$S(\text{in metre}) = 5(1{,}5)[\,1{,}5 - 1\,]$ ✓SF $= 3{,}75$ ✓CA	1SF substitution 1CA distance (2)	12.2.1 L1
1.1.6	$P(\text{boy}) = \frac{18}{42}$ ✓A ✓A $= \frac{3}{7}$ ✓CA	1A number of favourable outcomes 1A number of possible Outcomes 1CA simplification (3)	12.4.5 L2
1.1.7	$20 : 12$ $= 5 : 3$ $\therefore$ 2 more trains per hour ✓CA **OR** Number of trains in peak periods $= \frac{60}{12}$ $= 5$ ✓A Number of trains more $= 5 - 3$ $= 2$ ✓CA	1A writing ratio 1CA more trains **OR** 1A number of trains in peak periods 1CA more trains (2)	12.1.1 L2

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Ques	Solution	Explanation	AS/L
1.2.1	1 000 g = 2,2 pound $\therefore$ 200 g = $\frac{2,2}{5}$ pounds ✓A = 0,44 pounds ✓S	1A divide by 5 1S simplification (2)	12.3.2 L2
1.2.2	10 tbsp = 125 mℓ OR 10 : 125 = 3 : x 1 tbsp = 12,5 mℓ ✓A $x = \frac{125 \times 3}{10}$ ✓A = 37,5 mℓ ✓S $\therefore$ 3 tbsp = 12,5 × 3 mℓ = 37,5 mℓ ✓S	1A times three 1S simplification (2)	12.3.2 L1
1.2.3	For 6 persons use 50 g 6 = 50 g $\therefore$ 1 person use $\frac{50}{6}$ = 8,33 g ✓M/A OR $9 = \frac{50 \text{ g} \times 9}{6}$ ✓M/A $\therefore$ 9 persons use 8,33 × 9 = 75 g ✓CA = 75 g ✓CA	1M/A using ratio 1CA amount of pine nuts (2)	12.1.1 L2
1.3.1	the breadth decreases ✓✓A	2A correct answer (1)	12.2.2 L1
1.3.2	4 m ✓✓A	2A breadth (1)	12.2.2 L1
1.3.3	6 m ✓✓A	2A side length (2)	12.3.2 L1
1.3.4	Number of cabbages = $\frac{400 \text{ cm}}{16 \text{ cm}}$ ✓A + 1 at beginning = 25 + 1 = 26 ✓CA	1A dividing and adding 1CA number (2)	12.3.1 L2
		[27]	

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QUESTION 2 [29 MARKS]			
Ques	**Solution**	**Explanation**	**AS/L**
2.1.1	54% ✓✓ RG	2RG percentage (2)	12.4.4 L1
2.1.2	Natural area lost = 70% – 34% ✓ RG = 36% ✓ CA	1RG subtracting correct values 1CA area lost (2)	12.4.4 L1
2.1.3	Ave annual percentage rate = $\frac{127\ 909}{9\ 474\ 740} \times 100\%$ ✓M = 1,35 % per year ✓CA	1M calculating percentage 1CA percentage/annum (2)	12.1.1 L1
2.2.1	Median = $\frac{158+160}{2}$ ✓M = 159 ✓CA	1M finding median 1CA median (2)	12.4.3 L2
2.2.2	6 athletes ✓✓A	2A answer (2)	12.4.3 L2
2.2.3	P(less than 158) = $\frac{5}{12}$ ✓A ✓A ≈ 41,67 % ✓CA	1A number less than 160 1A total number of athletes 1CA % (3)	12.4.5 L2
2.3.1	MHR_{female} = 216 – (1,09 × 18) ✓SF = 196,38 ✓CA	1SF substitution 1CA maximum heart rate (2)	12.2.1 L1
2.3.2	Age = $\frac{202-189,9}{0,55}$ ✓SF = 22 ✓CA	1SF substitution 1CA age (2)	12.2.1 L1
2.3.3 (a)	female ✓A	1A answer (1)	12.2.2 L1
2.3.3 (b)	186 beats per minute ✓✓A	2A correct conclusion (2)	12.2.2 L1
2.3.3 (c)	Female ✓✓A	2A correct gender (2)	12.2.2 L1

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Ques	Solution	Explanation	AS/L
2.3.3 (d)	26 ✓✓A	2A correct conclusion (2)	12.2.2 L2
2.3.3 (e)	20 ✓✓A	2A correct conclusion (2)	12.2.2 L2
2.3.3 (f)	✓RG Difference in age = 22 – 18 ✓RG = 4 years ✓CA	2RG correct values 1CA correct conclusion (3)	12.2.2 L2
		[29]	

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QUESTION 3 [22 MARKS]			
Ques	**Solution**	**Explanation**	**AS/L**
3.1.1	✓M A = R6,31 × 9 × 5 ✓A = R283,95 ✓CA	1M concept - multiplying 1A correct values 1CA simplification (3)	12.1.1 L1(2) L2(1)
3.1.2	Monthly rate = $\frac{\text{Weekly rate} \times 13}{3}$ = $\frac{\text{R303,30} \times 13}{3}$ ✓SF = R1 314,30 ✓CA	1SF substituting weekly rate 1CA simplification (2)	12.2.1 L1
3.1.3	✓SF ✓SF Percentage increase = $\frac{\text{R316,80} - \text{R303,30}}{\text{R303,30}} \times 100\%$ ≈ 4,45 % ✓CA	1SF new rate 1SF old rate 1CA percentage (3)	12.1.1 L1
3.2.1	Brazil ✓ RT	1RT correct country (1)	12.4.4. L1
3.2.2	✓ M Total = 10 017 + 5 526 + 0 + 91 916 + 84 + 9 631 tonnes = 117 174 tonnes ✓ CA	1M addition 1CA correct total (2)	12.1.1 L1
3.2.3	✓ RT Amount of peaches = $\frac{30,53}{100}$ × 1 200 000 tonnes ✓ M = 366 360 tonnes ✓ CA	1RT correct percentage 1M writing 1,2 million in full 1CA amount of peaches produced (3)	12.1.1 L1
3.3.1	Gauteng's production area = $\frac{2,5}{100}$ ✓ A = $\frac{1}{40}$ ✓ CA	1A writing in fraction form 1CA simplification (2)	12.1.1 12.4.4 L1
3.3.2	Percentage (Piketberg) = 60% – (12+20+11)% ✓M = 17% ✓A	1M subtracting from 60% 1A correct percentage (2)	12.1.1 L1
3.3.3	✓A Klein Karoo and Free State 11% Wolsley/Tulbagh and Limpopo 12 % ✓A	1A Klein Karoo 1A Wolsley/Tulbagh (2)	12.4.4 L1
3.3.4	Ceres ✓✓A	2A correct area (2)	12.4.4 L1
		[22]	

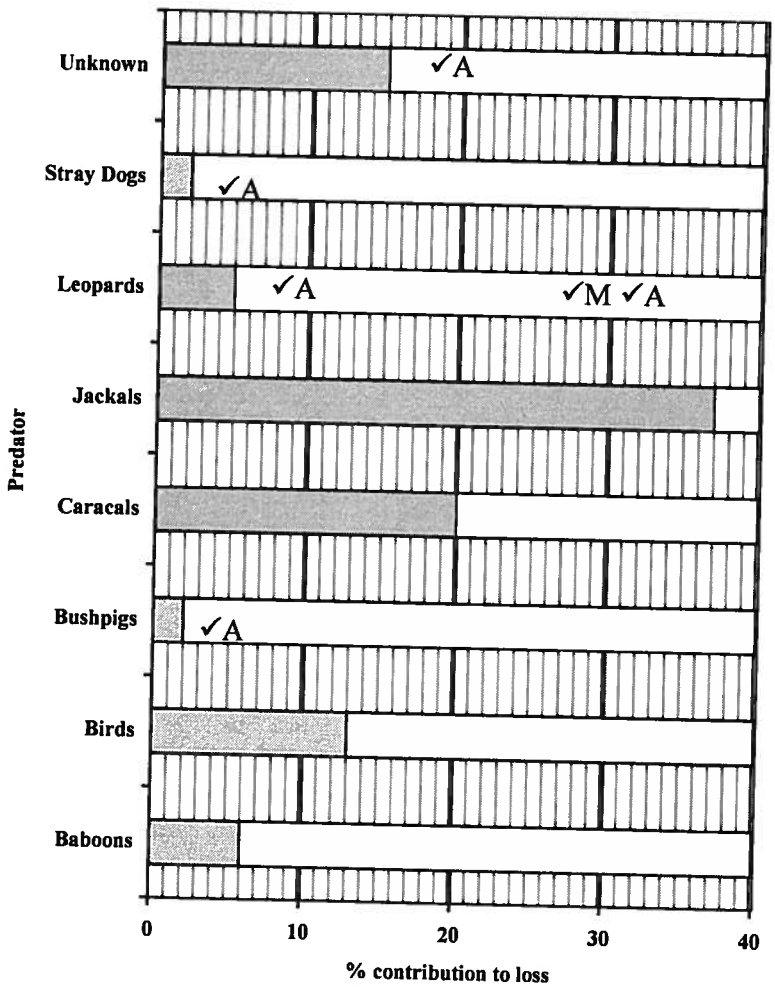
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QUESTION 4 [23 MARKS]			
Ques	**Solution**	**Explanation**	**AS/L**
4.1.1	$A = 768 + 1\,080 + 4\,455 + 2\,268$ ✓M $= 8\,571$ ✓CA	1M adding 1CA correct value of A (2)	12.1.1 L1
4.1.2	$B \times 3 \times 5 \times 9 = 4\,455$ ✓M $B \times 135 = 4\,455$ $B = 33$ ✓CA	1M multiplying and equating to 4 455 1CA correct value of B (2)	12.1.1 L1
4.1.3	✓A $36 \times 3 \times 2 \times C = 1\,080$ $216 \times C = 1\,080$ $C = \frac{1080}{216}$ ✓M $C = 5$ ✓CA	1A correct number of grades 1M dividing 1CA value of C (3)	12.1.1 L2
4.2.1	The Book ✓RT	1RT correct price (1)	12.1.1 L1
4.2.2	R1,80 ✓RT	1RT median (1)	12.4.3 L1
4.2.3	1,52; 1,52; 1,50; 1,48; 1,47; 1,32; 1,32; 1,25; 1,10 ✓✓A	2A correct order (2)	12.4.4 L1
4.2.4	✓A ✓A R1,32 and R1,52	1A R1,32 1A R1,52 (2)	12.4.3 L1
4.2.5	Range = R8,99 – R7,68 ✓M/A = R1,31 ✓CA	1M/A subtracting extreme values 1CA correct range (2)	12.4.3 L1(1) L2(1)
4.2.6	✓M $\text{Mean} = \frac{1{,}70+1{,}73+1{,}75+1{,}75+1{,}80+1{,}92+1{,}99+2{,}05+2{,}15}{9}$ $= \frac{16{,}84}{9}$ ✓A $= 1{,}871111\ldots$ $\approx$ R1,87 ✓CA	1M finding mean 1A simplification 1CA mean (3)	12.4.3 L2
4.3.1	768 exercise books $\approx$ 800 exercise books Number of packs $= \frac{800}{200}$ ✓R $= 4$ ✓CA **OR** Number of packs $= \frac{768}{200}$ ✓A $= 3{,}84$ ≈ 4 ✓R	1R rounding to nearest 200 1CA number of packs **OR** 1A dividing 1R number of packs (2)	12.2.1 L2

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Ques	Solution	Explanation	AS/L
4.3.2	Price per pack $= \frac{R16\,200 \times 20}{4\,455}$ ✓A ✓SF $= R72,73$ ✓CA	1A number per pack 1SF substitution 1CA price per pack (3)	12.2.1 L2
		[23]	

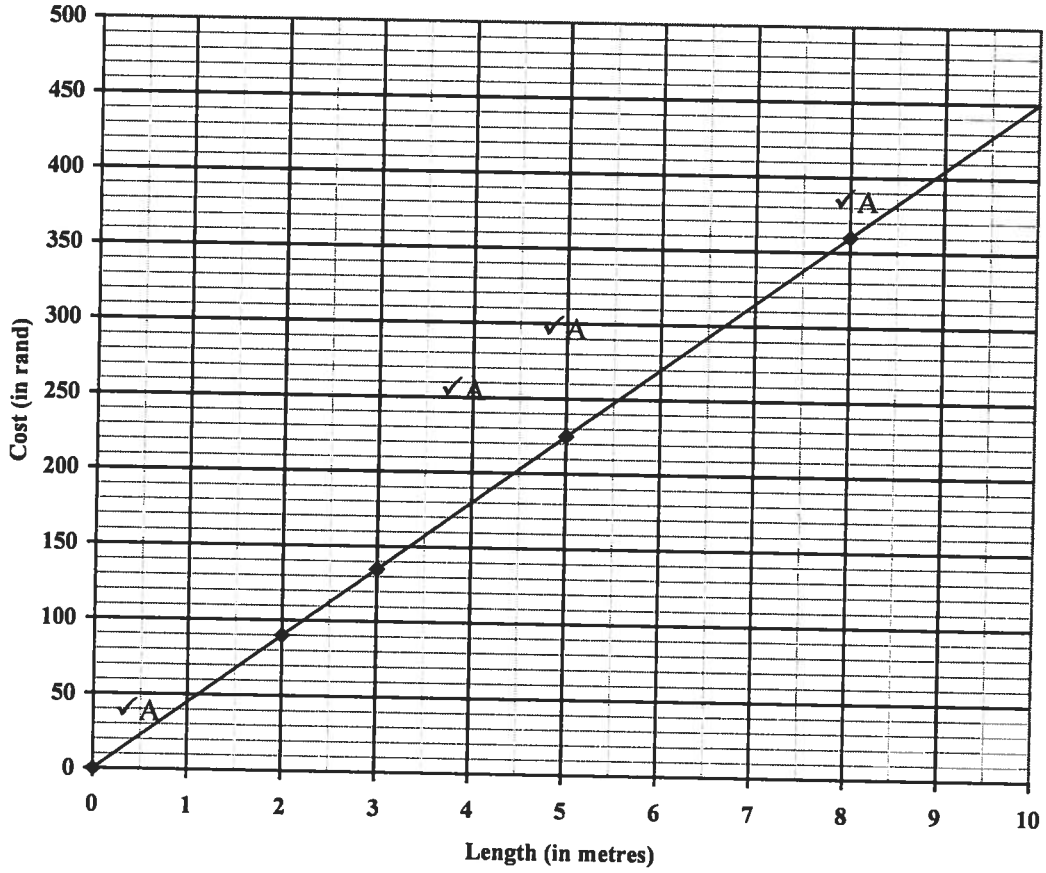
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QUESTION 5 [26 MARKS]			
Ques	**Solution**	**Explanation**	**AS/L**
5.1.1	C 3 ✓✓A OR 3C	1A C 1A 3 (2)	12.3.4 L1
5.1.2	Distance = 8 mm ✓✓A	2A correct measurement (2)	12.3.1 L1
5.1.3	North East ✓A	2A correct direction (1)	12.3.4 L2
5.1.4	✓A ✓A R75 and R329	2A 1 mark for each road (2)	12.3.4 L1
5.2.1	Jackal ✓A	1A correct predator (1)	12.4.3 L1
5.2.2	**LOSS OF LIVESTOCK BY PREDATORS**  	4A any 4 bars plotted correctly 1A all bars plotted correctly 1M correct type of graph (6)	12.4.2 L2

Ques	Solution	Explanation	AS/L
5.3.1 (a)	Total length = $6 \times 1{,}5\text{ m} + 8 \times 1\text{ m} + 5 \times 2\text{ m}$ ✓A ✓A ✓A $= 9\text{ m} + 8\text{ m} + 10\text{ m}$ $= 27\text{ m}$ ✓CA	1A using 1,5 m pieces 1A using 1 m pieces 1A using 2 m pieces 1CA length (4)	12.3.1 L2
5.3.1 (b)	Total area of mesh wire = $\mathbf{3 \times B \times H + 2 \times L(H + B)}$ ✓SF $= 3 \times 1\text{ m} \times 1{,}5\text{ m} + 2 \times 2\text{ m}(1{,}5\text{ m} + 1\text{ m})$ $= 4{,}5\text{ m}^2 + 10\text{ m}^2$ ✓S $= 14{,}5\text{ m}^2$ ✓CA	1SF substitute in formula 1S simplify 1CA surface area (3)	12.3.1 L1
5.3.2	Total cost = R59,95 per m² × 699,3 m² ✓M/A = R41 923,035 ✓CA ≈ R41 920 ✓R	1M/A multiplying correct amounts 1CA solution 1R rounding (3)	12.1.1 L2
5.3.3	Original 2 m becomes 3 m ∴ 1 m becomes $\frac{3}{2}$ m ✓A ✓A OR $2 : 1 : 1{,}5 = 3 : 1{,}5 : 2{,}25$ ∴ the height = 2,25 m ✓CA	1A using ratio 1CA height (2)	12.1.1 L1
		[26]	

QUESTION 6 [23 MARKS]			
Ques	**Solution**	**Explanation**	**AS/L**
6.1.1	Area = length × breadth = 30 cm × 45 cm = 1 350 cm^2 ✓A ✓A	1A solution 1A correct unit (2)	12.3.1 L1
6.1.2	Perimeter = 2(length + breadth) ✓SF = 2(30 cm + 45 cm) ✓S = 2(75 cm) = 150 cm ✓CA	1SF correct substitution 1S simplification 1CA simplifying (3)	12.3.1 L1
6.2.1	75 cm ✓✓A	2A correct length (2)	12.3.1 L1
6.2.2	180 cm = 2 × 75 cm + 30 cm ✓M ✓A ✓A ∴ She can make 8 tea towels and 12 dish cloths	1M breaking down 180 cm 1A number of tea towels 1A number of dish cloths (3)	12.3.1 L2
6.2.3	Area (in cm^2) = 900 – (3)^2 (4 - 3,14) ✓SF = 900 – 7,74 ✓S = 892,26 ✓CA	1SF substitution 1S simplification 1CA simplifying (3)	12.3.1 L1
6.3.1	Cost of the material = R45,00 × length of material (in metres) ✓✓A	2A formula (2)	12.1.1 L1
6.3.2	A = 5 × R45 ✓M = R225 ✓CA B = $\frac{360}{45}$ ✓M = 8 ✓CA	1M multiplying by 45 1CA value of A 1M dividing by 45 1CA value of B (4)	12.2.2 L1(2) L2(2)

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Ques	Solution	Explanation	AS/L
6.3.3	**COST OF THE MATERIAL**  1A (0;0) 1A (8;360) 1A any other point plotted correctly 1A joining the points with a straight line (CA for values of A and B only)		12.2.2 L2
		(4)	
		[23]	
		TOTAL	**150**

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